



**POWELL  
VALVES**

**RESILIENT SEATED  
BUTTERFLY VALVES**

DUCTILE IRON

WAFER BODY AND LUG BODY

SOFT SEAT



**Protect Tomorrow. Today  
Powell Valves  
NextGen Engineering**

## **Powell Valves NextGen Engineering**

For decades, Powell Valves has provided reliable and trusted products that not only meet, but exceed customer confidence and expectations.

## **Expect 100% Customer Satisfaction**

Quality performance is at the heart of every product we sell. We are proud of our long-standing reputation for excellence in our industry and will continue to anticipate and meet the growing needs of consumers.



**SINCE 1846**

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## THE WM. POWELL COMPANY - PROFILE

The Wm. Powell Company is very proud of our achievements and our evolution in the past 171 years. We like to refer to ourselves as 171 years young due to our flexibility in changing quickly to our customer's and the industry's needs. Our business strategy is to maintain excellent customer service. We will continue to focus on manufacturing the best of class products both in design features and quality, at competitive prices.

The Wm. Powell Company's products include a wide variety of valves in bronze, iron, steel, and corrosion resistant alloys for class 125 to class 4500 pressure service. Our experience as a pioneer in the development of industrial valves encompasses over a century and a half of craftsmanship and valve know-how. Through modern engineering, laboratory, research and testing facilities, the Wm. Powell Company has been a leader in changes in our industry. Our on-going program is a long-term commitment to the valve industry and is poised for significant future growth.

Powell Valves has endured a Civil War, World Wars I and II, and the Korean and Vietnam Wars. Powell rebuilt after floods, U.S. economic disaster in the Great Depression, and fierce foreign competition to help put men on the moon. Whether it was the "Manhattan Project", projects on U.S. Nuclear Submarines, Titan or Atlas rockets, in Nuclear Power plants, at Chemical or Petroleum plants, Pulp and Paper mills, or the harshness of cryogenic use, Powell Valves has a long tradition of quality in temperatures from -425°F to 1500°F and pressures from Class 125 to 4500.

Powell's market base is the Industrial Users: Petrochemical, Industrial Gas, Pulp & Paper, Pharmaceutical, Hydrocarbon processing, Food processing, Mining, Power Generation, Pipeline, Chemical, and Mechanical construction. Powell has formed business partnerships with industrial end-users, contractors, distributors and A&E's in the United States and around the World. Business partnerships formed on competitively priced product, on-time delivery, service and our tradition of product reliability.

Powell's network of support and product availability is unmatched. Powell offers the most complete multi-turn product line from a single source manufacturer. Powell's products are of the highest quality standards, are competitively priced and are produced with modern manufacturing technology and astute materials sourcing, with strategic purchasing & financial ventures in place.

Powell's diverse products and services, industry knowledge, project capabilities and reputation, coupled with our high quality distribution network, create a win-win arrangement where the end-user, contractor, distributor and manufacturer can benefit.

The Wm. Powell Company has made a commitment to our industry to increase growth and market share, with quality competitive products and services and on-time delivery. This is a global commitment.

Powell's end user customers have to react quickly to the demands that are on them to expand their businesses by implementing increased capacity and introducing new products into the market place at low costs and fast turn around times. Powell has addressed our customer's needs by increasing finished product inventory to over \$35,000,000 USD in the U.S.A. and with an additional inventory hub in Asia. As an additional advantage to our domestic and global customers, The Wm. Powell Company's Manning, SC facility is a Registered Free Trade Zone.

Powell also used its valve knowledge and expertise to construct a modification facility in the U.S.A. to assist customers with their needs, such as, automation, trim changes, end connection changes, additional quality inspections and special service pressure testing requirements, field service, etc...

The Wm. Powell Company is a closely held private corporation that has been in business since 1846. In fact, only nine presidents have led the Company through its 170, plus, years. The fact that we have been a healthy corporation during this period of time, having survived wars, depressions and natural disasters – in a very competitive marketplace – speaks well for itself.

We look forward to further discussing ways that The Wm. Powell Company can capture current and future opportunities together.

Again, The Wm. Powell Company thanks you for your interest in our company, our products and services. Powell looks forward to discussing ways to be your Preferred Valve Supplier. If you should have any questions, or comments, please contact us.

Sincerely,



Randy Cowart  
President, CEO & Chairman  
The Wm. Powell Company

# HOW TO ORDER POWELL RESILIENT SEAT BUTTERFLY VALVES

The figure number system outlined below is designed to cover the most common configurations. If special features are required which are not listed below please advise the detailed description for accurate processing.

Digit															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Size			Blank	Base Figure Number				End Code	Material Code	Trim	Packing/Gasket	Option Code			
6	.	0		1	2	7	1	Q	6	E	T	G	L	V	

Example Code for 6" Class 125, Resilient Seat Butterfly, Lug Style, Ductile Iron Body, SS 416 Stem, Ductile Iron Nickel Plated Disc, EPDM Seat, PTFE Packing, lever Operated

Size Code	
Code	Size
2.0	2"
2.5	2-1/2"
3.0	3"
4.0	4"
5.0	5"
6.0	6"
8.0	8"
10.	10"
12.	12"
14.	14"
16.	16"
18.	18"
20.	20"
24.	24"
etc.	etc.

End Code	
Code	Type
Q	LUG
Y	Wafer
Z	Special ends

Packing/Gasket	
Code	Option
T	PTFE Packing
G	Graphite Packing
Z	Special Packing

Material Codes	
Code	ASTM
6	Ductile Iron
Z	Special Material

Option Codes	
Code	Option
XXX	No Options
GLV	Lever Operator
GXX	Gear Operator
M--	Actuated (Elec.)
	Actuated (pnu.)

Base Figure Number	
No	Class
1271	125

Trim	
Code	Description
T	SS 416 Stem, 316 Disc, Teflon Seat
V	SS 416 Stem, 316 Disc, Viton Seat
E	SS 416 Stem, Ductile Iron, Nickel plated disc, EPDM Seat
B	SS 416 Stem, Ductile Iron, Nickel plated disc, Buna Seat
A	SS 416 Stem, 316 Disc, EPDM Seat
C	SS 416 Stem, 316 Disc, Buna Seat
D	SS 416 Stem, Bronze Disc, EPDM Seat
F	SS 416 Stem, Bronze Disc, Buna Seat
Z	Special Trim

## POWELL VALVE DESIGN FEATURES:

### 1. Stem

- One piece through shaft

### 2. ISO Direct Mount Pad

- Ductile iron (ASTM A 536)
- 2”-12” : square stem
- 14” and larger: double-D stem

### 3. O-Ring

- Prevention of stem leakage

### 4. Bushing

- Provides shaft support

### 5. Seat

- Phenolic back seat

### 6. Disc

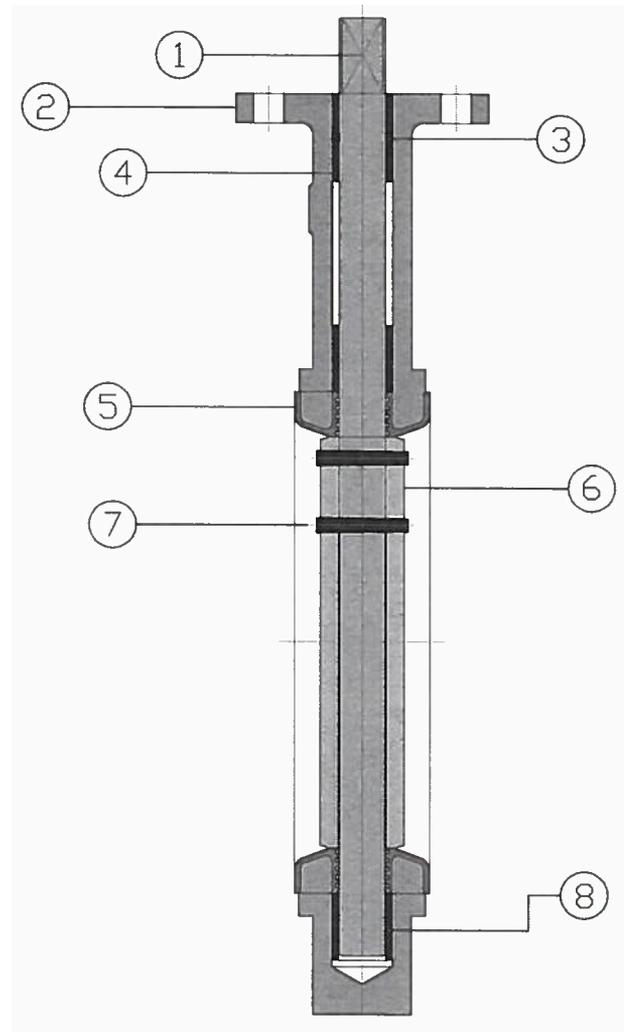
- Provides bubble tight shut-off

### 7. Taper Pin

- Ensures a positive vibration-proof shaft

### 8. Support Shaft Seal

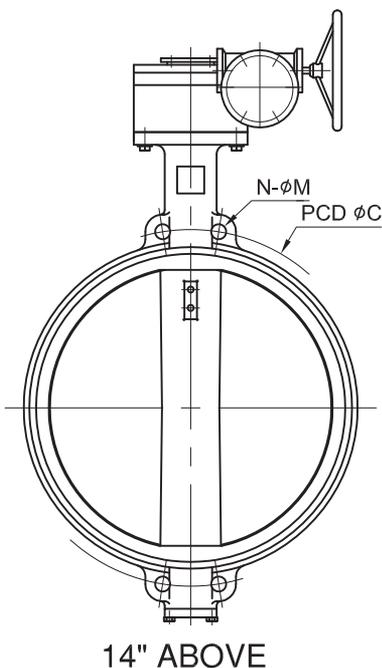
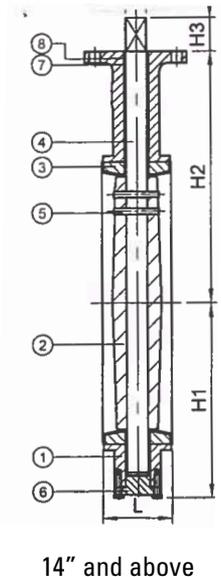
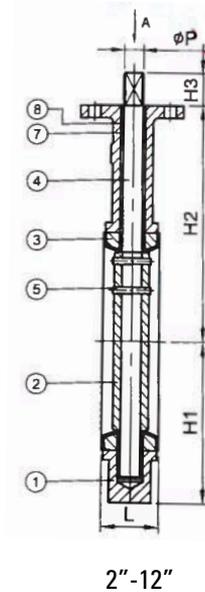
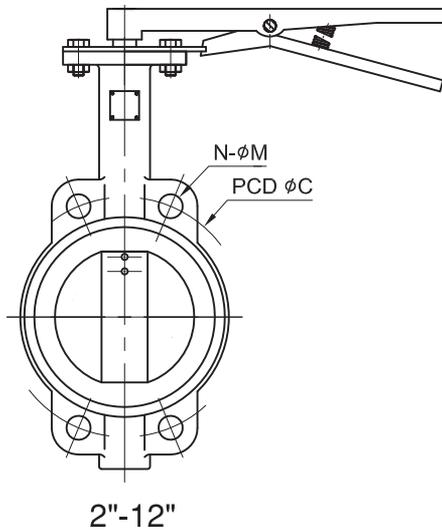
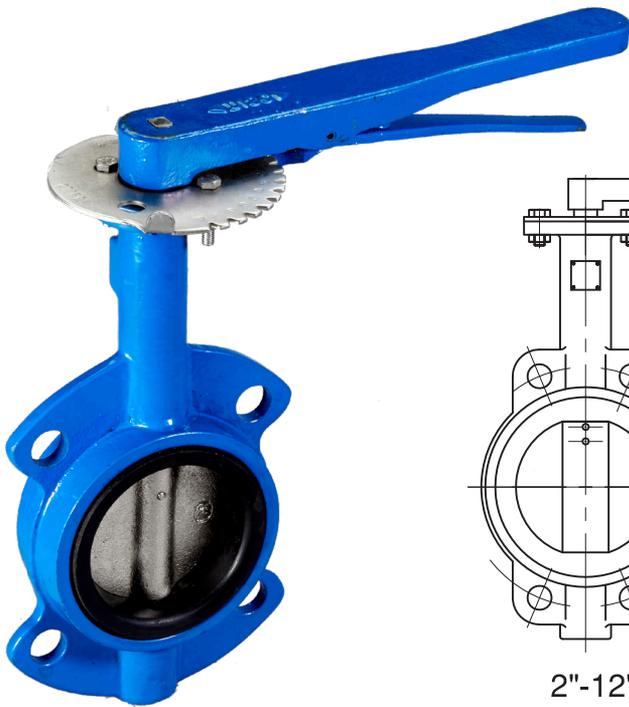
- Bonding of elastomer to phenolic backing ring protects against distortion, a common cause of shaft leakage



## VALVE SEAT MATERIAL SELECTION GUIDE

MATERIAL	DESCRIPTION	COLOR
<b>PTFE</b>	<p>The material is the basic seat material used in most butterfly valves. Its chemical compatibility is excellent for almost all media service applications.</p> <p><b>-40°F — 275°F</b></p>	White
<b>EPDM</b>	<p>EPDM has good abrasion and tear resistance while offering excellent chemical resistance to a variety of acid and weak alkaline-based media. It also has exceptional weather aging and ozone resistance. EPDM is susceptible to attacks by oils and therefore is not recommended for applications involving petroleum oils, hydrocarbons, alcohols, strong acids, or strong alkalines.</p> <p><b>-30°F — 275°F</b></p>	Black
<b>BUNA-N</b>	<p>BUNA-N (NBR) is a general purpose polymer with good resistance to oil, water, solvents, and hydraulic fluids. With good compression, tensile strength and abrasion-resistance, BUNA-N performs well with diverse media such as fatty acids, oils, alcohols, compressed air, Di-ester based fluids, inactive gasses or glycerine.</p> <p><b>10°F — 180°F</b></p>	Black
<b>VITON</b>	<p>Viton is DuPont's trademark name for Fluoroelastomer and is widely recognized for excellent heat resistance. With extensive chemical compatibility spanning a wide range of concentration and temperature ranges, fluorocarbon elastomers have gained acceptance in a variety of applications. Viton offers excellent resistance to aggressive fuels and chemicals as well as diverse media as mineral acids, salt solutions, chlorinated hydrocarbons, and petroleum oils.</p> <p><b>0°F — 350°F</b></p>	Black or Red

# SERIES 1271 Y RESILIENT SEAT BUTTERFLY VALVES WAFER STYLE



**DESIGN FEATURES:**

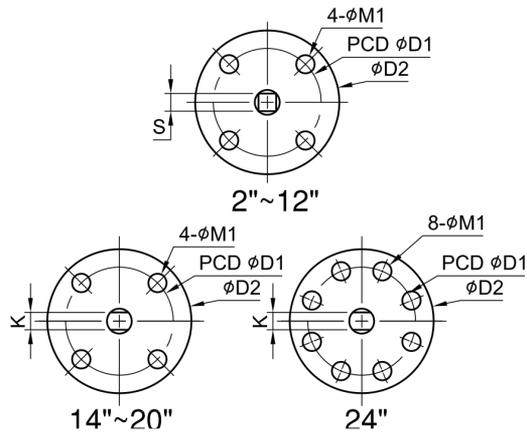
- Upper and Lower Bearings to maximize valve life
- Direct Mount
- 2"-12" standard with lever
- 14" and larger standard with gear
- Support shaft seal: bonding of elastomer to phenolic backing ring protects against distortion, a common cause of shaft leakage
- Integral ISO mounting pad for easy valve operation; no bracket needed
- One piece stem ensures dependability and positive disc positioning
- Available in Wafer and Lug styles
- Disc has a precision profile that provides bubble tight shut off and assures minimum torque
- Seat Materials: Multiple seat materials available (Page 7)
- Seat Face negates need for flange gaskets
- O-Ring ensures dependability and positive disc positioning

Class	Fig. No.	End
2" - 12" 200psi 14" - 24" 130psi	1271 Y	Wafer

PART	MATERIAL
Body	DI
Seat	EPDM / BUNA / VITON / PTFE
Disc	DI / SS 316 / BRONZE
Seat	BUNA / EPDM / PTFE
Bushing	PTFE
O-Ring	EPDM / BUNA
Taper Pin	SS 316
Stem	SS 416

See seating chart for temperature. (Page 7)

## RESILIENT SEATED BUTTERFLY VALVE (WAFER STYLE) DIMENSIONS

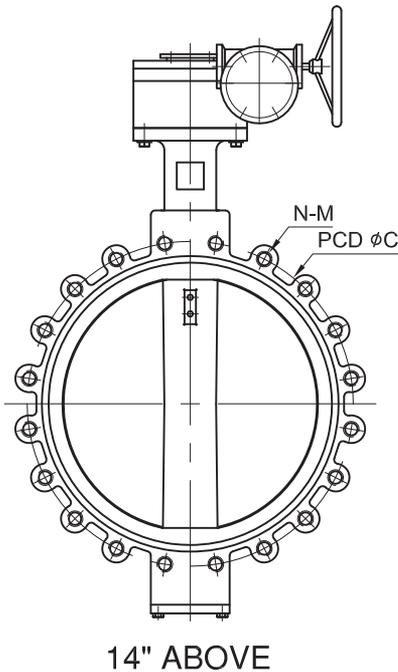
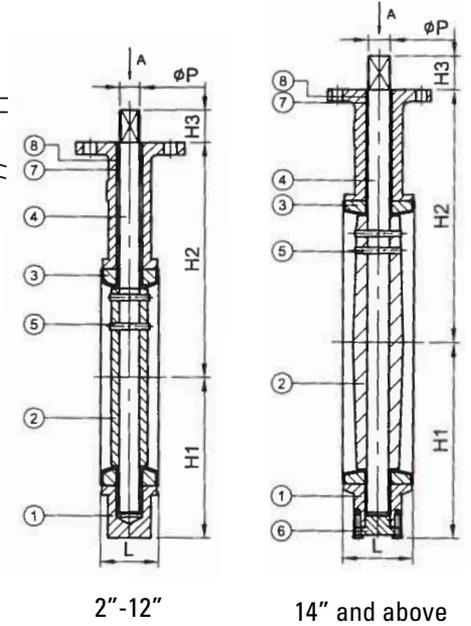
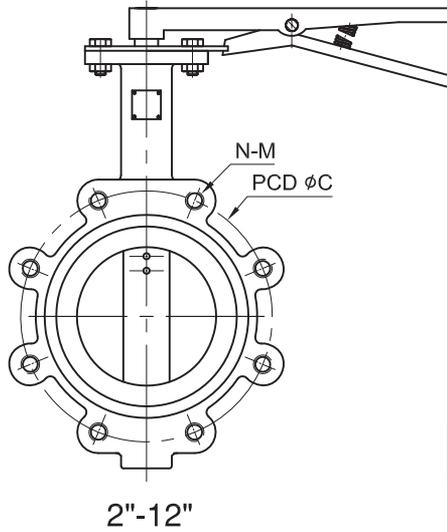
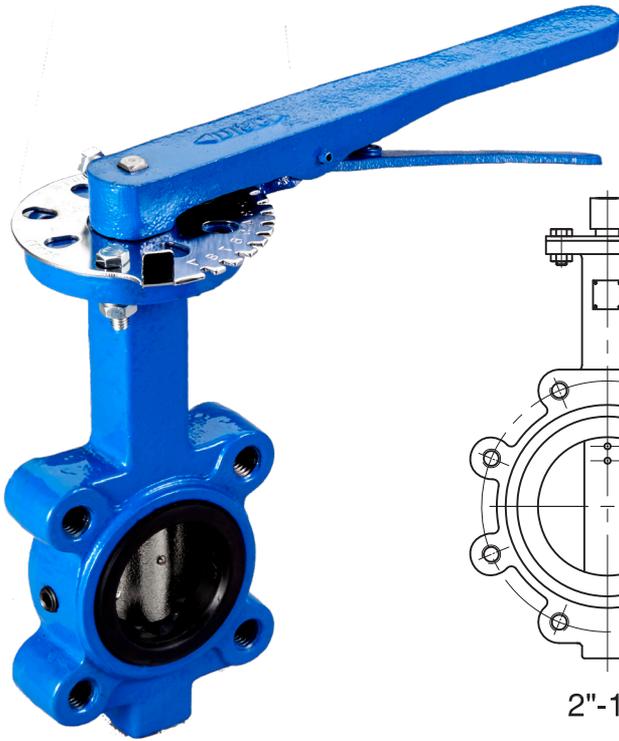


VALVE SIZE		C		L		H1		H2		H3		S		M.FL	WEIGHT
NPS	DN													ISO	LBS
2"	DN50	4.74	120.5	1.61	46	2.99	76	6.38	162	1.18	30	0.35	9	F07	5.5
2-1/2"	DN65	5.49	139.5	1.93	49	3.5	89	6.89	175	1.18	30	0.35	9		7.7
3"	DN80	6	152.5	1.93	49	3.74	95	7.13	181	1.18	30	0.35	9		8.8
4"	DN100	7.5	190.5	2.17	55	4.49	114	7.87	200	1.18	30	0.43	11		12
5"	DN125	8.5	216	2.32	59	5	127	8.39	213	1.18	30	0.55	14		16.5
6"	DN150	9.51	241.5	2.32	59	5.51	140	8.86	225	1.18	30	0.55	14		19
8"	DN200	11.75	298.5	2.52	64	6.97	177	10.24	260	1.42	36	0.67	17	F11	30
10"	DN250	14.25	362	2.81	71.5	7.99	203	11.5	292	1.42	36	0.87	22		21
12"	DN300	17.01	432	3.13	79.5	9.53	242	13.19	335	1.42	36	0.87	22		66
14"	DN350	18.74	476	3.19	81	10.51	267	14.49	368	1.77	45				129
16"	DN400	21.24	539.5	3.54	90	11.73	298	15.75	400	2.01	51			F14	222
18"	DN450	22.76	578	4.29	109	12.52	318	16.61	422	2.01	51				235
20"	DN500	25	635	5.31	135	13.74	349	18.86	479	2.52	64				352
24"	DN600	29.51	749.5	6.18	157	17.48	444	22.13	562	2.76	70			F25	501

VALVE SIZE		K		P		D1		D2		N	M		M1		M.FL	WEIGHT
NPS	DN														ISO	LBS
2"	DN50			0.5	12.7	2.76	70	3.54	90	4	0.75	0.19	0.41	10.5	F07	5.5
2-1/2"	DN65			0.5	12.7	2.76	70	3.54	90	4	0.75	0.19	0.41	10.5		7.7
3"	DN80			0.5	12.7	2.76	70	3.54	90	4	0.75	0.19	0.41	10.5		8.8
4"	DN100			0.62	15.8	2.76	70	3.54	90	8	0.75	0.19	0.41	10.5		12
5"	DN125			0.75	19.05	2.76	70	3.54	90	8	0.87	22	0.41	10.5		16.5
6"	DN150			0.75	19.05	2.76	70	3.54	90	8	0.87	22	0.41	10.5		19
8"	DN200			0.87	22.2	4.02	102	4.92	125	8	0.87	22	0.49	12.5	F11	30
10"	DN250			1.13	28.6	4.02	102	4.92	125	12	0.98	25	0.49	12.5		21
12"	DN300			1.25	31.8	4.02	102	4.92	125	12	0.98	25	0.49	12.5		66
14"	DN350	0.94	24	1.25	31.8	4.02	102	4.92	125	12	1.14	29	0.49	12.5		129
16"	DN400	1.06	27	1.31	33.3	5.51	140	6.89	175	16	1.14	29	0.71	18	F14	222
18"	DN450	1.06	27	1.5	38	5.51	140	6.89	175	16	1.26	32	0.71	18		235
20"	DN500	1.26	32	1.62	41.15	5.51	140	6.89	175	20	1.26	32	0.71	18		352
24"	DN600	1.42	36	1.99	50.65	10	254	11.81	300	20	1.38	35	0.71	18	F25	501

ADDITIONAL SIZES, MATERIALS AND CLASSES AVAILABLE UPON REQUEST.

# SERIES 1271 Q RESILIENT SEAT BUTTERFLY VALVES LUG STYLE



**DESIGN FEATURES:**

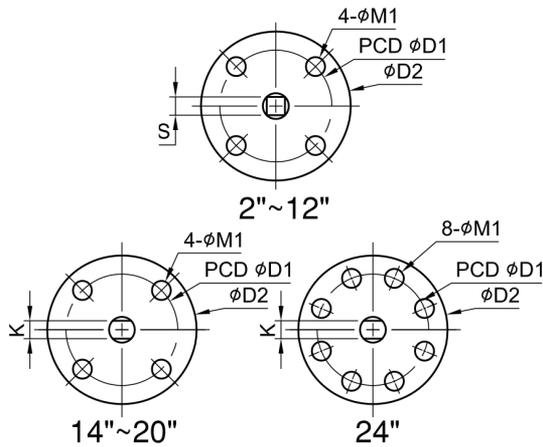
- Upper and Lower Bearings to maximize valve life
- Direct Mount
- 2"-12" standard with lever
- 14" and larger standard with gear
- Support shaft seal: bonding of elastomer to phenolic backing ring protects against distortion, a common cause of shaft leakage
- Integral ISO mounting pad for easy valve operation; no bracket needed
- One piece stem ensures dependability and positive disc positioning
- Available in Wafer and Lug styles
- Disc has a precision profile that provides bubble tight shut off and assures minimum torque
- Seat Materials: Multiple seat materials available (Page 7)
- Seat Face negates need for flange gaskets
- O-Ring ensures dependability and positive disc positioning

Class	Fig. No.	End
2" - 12" 200psi 14" - 24" 130psi	1271 Q	Lug

PART	MATERIAL
Body	DI
Seat	EPDM / BUNA / VITON / PTFE
Disc	DI / SS 316 / BRONZE
Seat	BUNA / EPDM / PTFE
Bushing	PTFE
O-Ring	EPDM / BUNA
Taper Pin	SS 316
Stem	SS 416

See seating chart for temperature. (Page 7)

## RESILIENT SEATED BUTTERFLY VALVE (LUG STYLE) DIMENSIONS



VALVE SIZE		C	L	H1		H2		H3		S		M.FL	WEIGHT		
NPS	DN												ISO	LBS	
2"	DN50	4.74	120.5	1.81	46	2.99	76	6.36	162	1.18	30	0.35	9	F07	9
2-1/2"	DN65	5.49	139.5	1.93	49	3.5	89	6.89	175	1.18	30	0.35	9		11
3"	DN80	6	152.5	1.93	49	3.74	95	7.13	181	1.18	30	0.35	9		12
4"	DN100	7.5	190.5	2.17	55	4.49	114	7.87	200	1.18	30	0.43	11		19
5"	DN125	8.5	216	2.32	59	5	127	8.39	213	1.18	30	0.55	14		22
6"	DN150	6.51	241.5	2.32	59	5.51	140	8.86	225	1.18	30	0.55	14		31
8"	DN200	11.75	298.5	2.52	64	6.81	173	10.24	260	1.42	36	0.67	17	F11	42
10"	DN250	14.25	362	2.61	71.5	7.99	203	11.5	292	1.42	36	0.87	22		60.5
12"	DN300	17.01	432	3.13	79.5	9.33	237	13.27	337	1.42	36	0.87	22		88
14"	DN350	18.74	476	3.19	81	11.02	280	14.49	368	1.77	45				179
16"	DN400	21.24	539.5	3.54	90	11.97	304	15.75	400	2.01	51			F14	284
18"	DN450	22.76	578	4.29	109	14.25	362	16.73	425	2.01	51				349
20"	DN500	25	635	5.31	135	14.49	368	16.9	480	2.52	64				499
24"	DN600	29.51	749.5	6.18	157	17.46	444	22.13	562	2.76	70			F25	694

VALVE SIZE		K		P		D1		D2		N	M	M1		M.FL	WEIGHT
NPS	DN													ISO	LBS
2"	DN50			0.5	12.7	2.76	70	3.54	90	4	5/8"-11	0.41	10.5	F07	9
2-1/2"	DN65			0.5	12.7	2.76	70	3.54	90	4	5/8"-11	0.41	10.5		11
3"	DN80			0.5	12.7	2.76	70	3.54	90	4	5/8"-11	0.41	10.5		12
4"	DN100			0.62	15.8	2.76	70	3.54	90	8	5/8"-11	0.41	10.5		19
5"	DN125			0.75	19.05	2.76	70	3.54	90	8	3/4"-10	0.41	10.5		22
6"	DN150			0.75	19.05	2.76	70	3.54	90	8	3/4"-10	0.41	10.5		31
8"	DN200			0.87	22.2	4.02	102	4.92	125	8	3/4"-10	0.49	12.5	F11	42
10"	DN250			1.13	28.6	4.02	102	4.92	125	12	7/8"-9	0.49	12.5		60.5
12"	DN300			1.25	31.8	4.02	102	4.92	125	12	7/8"-9	0.49	12.5		88
14"	DN350	0.94	24	1.25	31.8	4.02	102	4.92	125	12	1"-8	0.49	12.5		179
16"	DN400	1.06	27	1.31	33.3	5.51	140	6.89	175	16	1"-8	0.71	18	F14	284
18"	DN450	1.06	27	1.5	38	5.51	140	6.89	175	16	1-1/8"-7	0.71	18		349
20"	DN500	1.26	32	1.62	41.15	5.51	140	6.89	175	20	1-1/8"-7	0.71	18		499
24"	DN600	1.42	36	1.99	50.65	10	254	11.81	300	20	1/4"-7	0.71	18	F25	694

ADDITIONAL SIZES, MATERIALS AND CLASSES AVAILABLE UPON REQUEST.

## BOLTING DATA AND SOFT SEAT TORQUE DATA

**Size and Quantity of Bolts for Valve Installation ANSI 125/150**

SIZE	STUD BOLT FOR WAFER TYPE			HEXAGON HEAD BOLT FOR LUG TYPE	
	QTY	UNC	LENGTH	QTY	UNXCL
2"	4	5/8"	120	4x2	5/8"x35
2.5"	4	5/8"	130	4x2	5/8"x40
3"	4	5/8"	133	4x2	5/8"x40
4"	8	5/8"	139	8x2	5/8"x45
5"	8	3/4"	152	8x2	3/4"x45
6"	8	3/4"	155	8x2	3/4"x45
8"	8	3/4"	165	8x2	3/4"x50
10"	12	7/8"	183	12x2	7/8"x60
12"	12	7/8"	183	12x2	7/8"x65
14"	12	1"	214	12x2	1"x70
16"	16	1"	241	16x2	1"x85
18"	16	1 1/8"	265	16x2	1 1/8"x90
20"	20	1 1/8"	284	20x2	1 1/8"x100
24"	20	1 1/4"	305	20x2	1 1/4"x110

**PTFE/VITON Seat Butterfly Valve Torques**

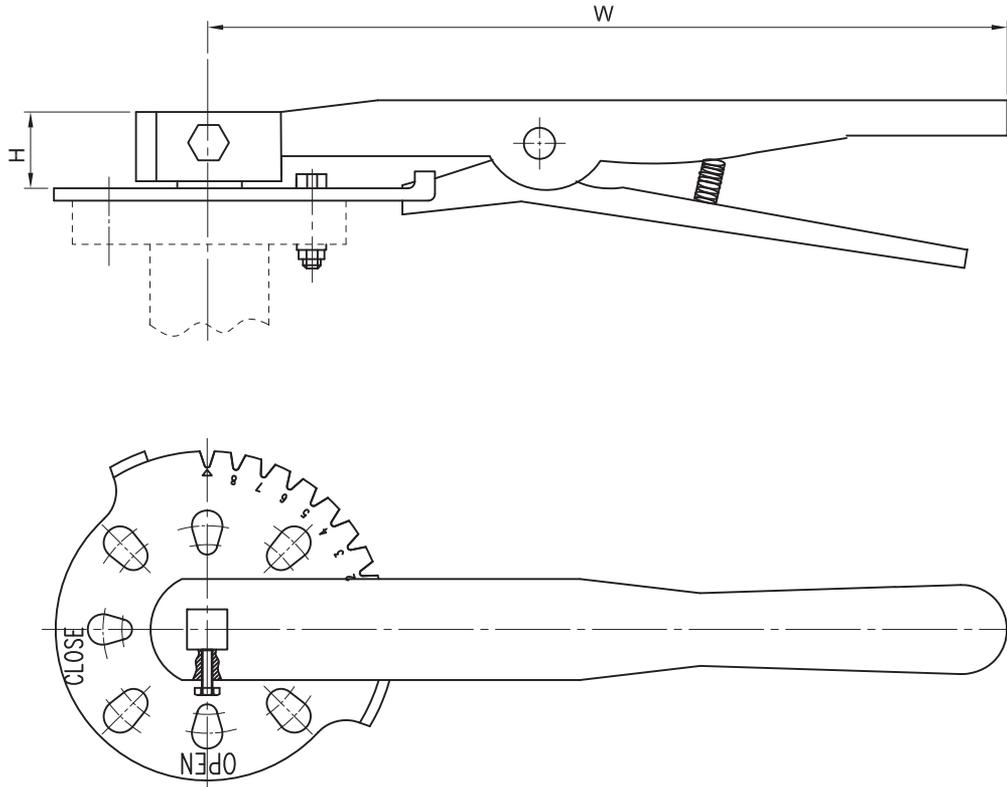
SIZE	TORQUE (N.m)	TORQUE (in.lb)
2"	20	177
2.5"	24	212
3"	32	283
4"	45	398
5"	60	531
6"	105	929
8"	260	2301
10"	365	3231
12"	520	4602

**EPDM/NBR Seat Butterfly Valve Torques**

SIZE	TORQUE (N.m)	TORQUE (in.lb)
2"	15	133
2.5"	17	150
3"	25	221
4"	35	310
5"	45	398
6"	80	708
8"	170	1505
10"	260	2301
12"	380	3363
14"	450	3983
16"	650	5753
18"	1000	8851
20"	1300	11506
24"	2200	19472

Note: The torque values are under wet condition. Torque values do not include a safety factor, proposed to increase by the safety value of 25%. The torque values are for reference only.

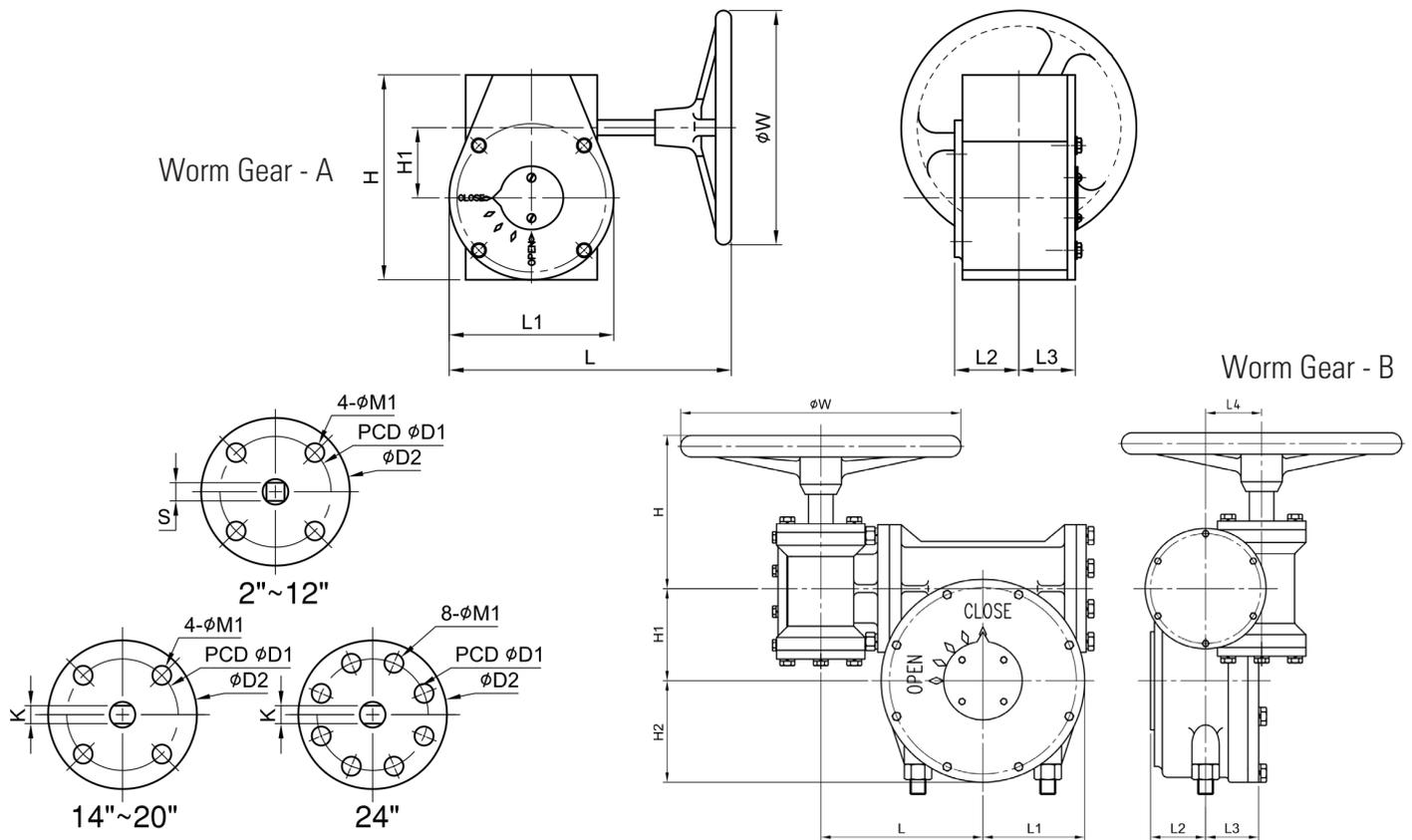
# POWELL LEVER OPERATORS



**Dimension (in/mm)**

VALVE SIZE NPS / DN	H	W
2" - 6" / DN50-DN150	1.18 / 29.97	10.81 / 274.57
10" - 12" / DN250-DN300	1.43 / 36.32	14.49 / 368.05

## POWELL "A" SERIES QUARTER TURN WORM GEARS



Dimension (in/mm)

VALVE SIZE		S	K	P	D1	M1				
NPS	DN									
2"	DN50	0.35	9	-	-	0.5	12.7	2.76	70	M8
2-1/2"	DN65	0.35	9	-	-	0.5	12.7	2.76	70	M8
3"	DN80	0.35	9	-	-	0.5	12.7	2.76	70	M8
4"	DN100	0.43	11	-	-	0.62	15.8	2.76	70	M8
5"	DN125	0.55	14	-	-	0.75	19.05	2.76	70	M8
6"	DN150	0.55	14	-	-	0.75	19.05	2.76	70	M8
8"	DN200	0.67	17	-	-	0.87	22.2	4.02	102	M10
10"	DN250	0.87	22	-	-	1.13	28.6	4.02	102	M10
12"	DN300	0.87	22	-	-	1.25	31.8	4.02	102	M10
14"	DN350	-	-	0.94	24	1.25	31.8	4.02	102	M10
16"	DN400	-	-	1.06	27	1.31	33.3	5.51	140	M16
18"	DN450	-	-	1.06	27	1.5	38	5.51	140	M16
20"	DN500	-	-	1.26	32	1.62	41.15	5.51	140	M16
24"	DN600	-	-	1.42	36	1.99	50.65	10	254	M16

## POWELL "A" SERIES QUARTER TURN WORM GEARS

### Gear Operators for Resilient Seat Butterfly Valves

POWELL PART #	DESCRIPTION	HEX DIMENSION	GEAR ISO PATTERN	FITS VALVE SIZE:
RBF-GEAR-15-9	Gear for Resilient Seat Butterfly - 2", 2.5", 3"	9 mm	F07	2", 2.5", 3"
RBF-GEAR-15-11	Gear for Resilient Seat Butterfly - 4"	11 mm	F07	4"
RBF-GEAR-15-14	Gear for Resilient Seat Butterfly - 5", 6"	14 mm	F07	5", 6"
RBF-GEAR-50-17	Gear for Resilient Seat Butterfly - 8"	17 mm	F10	8"
RBF-GEAR-50-22	Gear for Resilient Seat Butterfly - 10"	22 mm	F10	10"
RBF-GEAR-120-22	Gear for Resilient Seat Butterfly - 12"	22 mm	F10	12"

### Dimensions (in/mm) , L - L3

VALVE SIZE		L		L1		L2		L3		TORQUE (in-lbs/N-m)		RATIO
NPS	DN											
2" - 6"	DN50-DN150	8.9	226.01	4.13	105	1.42	35.99	1.1	27.99	1327.6	150	24:1
8" - 10"	DN200-DN250	12.32	313	5.98	151.99	1.81	46	1.34	34.01	4425.4	500	32:1
12" - 14"	DN300-DN350	12.09	307.01	6.46	164.01	1.81	46	1.42	35.99	10620.8	1200	50:1

### Dimensions (in/mm) , L - L4

VALVE SIZE		L		L1		L2		L3		L4		TORQUE (in-lbs/N-m)		RATIO
NPS	DN													
16" - 20"	DN400-DN500	6.5	165	4.09	103.99	2.21	56.01	2.13	54	2.24	57	22126.8	2500	532:1
24"	DN600	8.78	223.01	5.75	146	2.87	73	2.76	70	2.6	65.99	70805.6	8000	704:1

### Dimensions (in/mm) , H - W

VALVE SIZE		H		H1		W		TORQUE (in-lbs/N-m)		RATIO
NPS	DN									
2" - 6"	DN50-DN150	5.04	127.99	1.77	45.01	5.91	150.01	1327.6	150	24:1
8" - 10"	DN200-DN250	7.05	179.02	2.48	62.99	11.81	300	4425.4	500	32:1
12" - 14"	DN300-DN350	7.87	200	3.07	78	11.81	300	10620.8	1200	50:1

### Dimensions (in/mm) , H - W

VALVE SIZE		H		H1		H2		W		TORQUE (in-lbs/N-m)		RATIO
NPS	DN											
16" - 20"	DN400-DN500	6.14	156.01	3.7	94.01	4.1	104.01	11.22	284.99	22126.8	2500	532:1
24"	DN600	7.36	186.99	5.51	140	5.75	146	15.55	395	70805.6	8000	704:1

## GENERAL TERMS AND CONDITIONS OF SALE

**1. TERMS EXCLUSIVE:** The terms and conditions of the purchase order or requisition to which these GENERAL TERMS AND CONDITIONS OF SALE (these "Terms and Conditions") relate or are attached (each, an "Order"), are exclusive and represent the full and final agreement of The William Powell Company, an Ohio corporation ("Powell") and the purchaser ("Purchaser") as they relate to the goods, materials, services or labor covered in the Order (all, whether or not tangible property or goods, the "Products"), and may not be added to, modified, superseded or altered except by written agreement or modification signed by Powell's authorized representative, notwithstanding any additional or other proposals, terms and conditions which may now or in the future appear on Purchaser's Orders or other forms (notification of objection thereto being given hereby), in whatever form transmitted, and notwithstanding any shipment of Products, acceptance of payments or other similar acts of Powell.

**2. SALE BY AGENT OR REPRESENTATIVE:** These Terms and Conditions shall govern the liability and obligations of Powell in regard to the transaction in Products, whether the sale was procured directly by Powell or indirectly through an authorized sales representative.

**3. CONTRACT:** Orders may be submitted to Powell in writing (which will include via an electronic transmission) or orally, provided, however, that if Purchaser fails to provide a detailed, formal written Order (a) within ten (10) days of an oral Order or (b) before shipment of the Order, whichever is earlier, then Product descriptions, quantities, specifications, etc., as set forth in Powell's acknowledgement, acceptance and/or invoice, shall be conclusive and binding on both parties, and discrepancies shall be for Purchaser's account. All Orders are subject to credit approval and acceptance by Powell. An Order shall be deemed to have been accepted by Powell upon the first to occur of the following: (i) Powell's first shipment or other tender of the Order or (ii) acceptance thereof by Powell in writing.

**4. PERMISSIBLE VARIATIONS:** Powell has the right, prior to the delivery of Products to Purchaser and without the giving of notice to Purchaser, to make any changes in the composition, fabrication or design of the Products which, in the opinion of Powell, do not affect the general characteristics or properties of the Products. In addition, Powell may make any change or any variation in the Products, whether of quality or quantity, which is within governmental or professional standards or specifications applicable at the time of manufacture without giving notice to Purchaser. Purchaser will accept any Products which may incorporate any changes in the composition, fabrication or design.

**5. PRICES:** Prices for Products are quoted and payable in U.S. dollars ("USD"). Prices stated in general price lists are subject to change without prior notice, at Powell's sole discretion. Prices that are provided in a specific quotation will remain firm for thirty (30) days of the issued date of the written quotation. All prices are exclusive of freight costs, taxes and duties. All taxes (including, without limitation, sales, use, stamp, value added and other taxes) duties, fees, charges and assessments by whomsoever levied on or with respect to the Products, and whether levied against Purchaser or Powell, are for Purchaser's account and, unless invoiced, shall be paid by Purchaser directly to the appropriate governmental agency.

**6. SHIPPING TERMS:** Delivery of Products to Canada, the United States and Mexico shall be F.O.B. (as defined in the Uniform Commercial Code as in effect in the State of Ohio) Powell's plant of manufacture. Delivery of Products outside of Canada, United States and Mexico shall be Ex Works (as defined by INCOTERMS 2000) Powell's plant of manufacture. All transportation expenses, freight and insurance shall be paid by Purchaser, and risk of delay, loss or damage incurred in transit shall be borne by Purchaser, who shall be responsible to file any such claims with the relevant carrier(s) or insurers.

Upon tender of delivery, title shall pass to Purchaser, subject to Powell's right of stoppage in transit and to Powell's security interest in the Products, as set forth in Section 8.

If the Products are held by Powell subject to receiving instructions from Purchaser or in any case where Powell, in its sole discretion, determines any part of the Products should be held for Purchaser's account, Powell may invoice the Products, and Purchaser agrees to make payment in accordance with these Terms and Conditions. Products invoiced and held at any location by Powell will be held at Purchaser's risk, and Powell may charge for (but is not obligated to carry) insurance and storage.

If Purchaser has declared or manifested an intention not to accept delivery in accordance with these Terms and Conditions, no tender will be necessary, but Powell may, at its option, give notice to Purchaser that Powell is ready and willing to deliver and such notice will constitute a valid tender of delivery.

**7. INSPECTION AND ACCEPTANCE:** Each shipment shall be inspected by Purchaser for observable damage and/or non-conformity at the time of delivery of the Products. Failure to so inspect shall constitute a waiver of Purchaser's rights of inspection and shall constitute an unqualified acceptance of the Products. If, after such inspection, Purchaser attempts to reject any Products, Purchaser shall fully specify all claimed damage or non-conformity in writing in a notice of rejection sent to Powell within five (5) days of delivery of the Products. Purchaser's failure to so specify shall constitute a waiver of that damage or non-conformity. Partial deliveries shall be accepted by Purchaser and paid for according to these Terms and Conditions.

**8. PAYMENT TERMS:** Payment shall be due net thirty (30) days from the date of invoice. Overdue accounts shall be subject to a carrying charge of one and one-half percent (1.5%) per month or portion of a month on the unpaid balance until paid in full. In the event Purchaser shall default on its obligations hereunder, Purchaser shall be liable for all of Powell's costs and expenses of collection, including reasonable attorneys' fees. Powell may, at its option, cancel and/or sell any unshipped Products should Purchaser fail to fulfill the complete terms of payment. Purchaser will have no right to offset any amounts against any payment or other obligation which Powell may owe to Purchaser. Powell hereby reserves a security interest in the Products to secure Purchaser's payment of the purchase price and any other amounts owed by Purchaser, and Purchaser agrees that Powell may (but is not obligated to) take such action as Powell deems advisable to evidence and perfect such interest and that Purchaser will cooperate with Powell in the taking of such actions.

**9. CREDIT APPROVAL:** Notwithstanding the provisions of Section 8, Powell may at any time decline to make any shipment or delivery or perform any work except upon receipt of payment or upon terms and conditions or security satisfactory to Powell, including, but not limited to, requiring that Purchaser provide Powell one or more letters of credit.

**10. LEAD TIMES:** Estimated lead times, if specified, are approximate only and are not guaranteed. Failure to ship on or near the estimated date shall not entitle Purchaser to any remedy or to cancel the Order without charge. Estimated lead times are provided Ex Works Powell's plant in weeks after receipt of Order. Estimated lead times are stated on a net basis and do not include any additional lead time due to scheduled and/or unscheduled plant shutdowns. Scheduled plant shutdowns include a two (2) week shutdown each winter and each summer. Estimated lead times are quoted on the basis of material availability and plant loading at the time of quotation, which are subject to change. Purchaser should confirm any estimated lead times at time of Order.

**11. MINIMUM ORDER CHARGE:** With respect to any Order that includes spare, replacement or component parts ("Parts") as Products, a minimum Order charge of One Hundred USD (\$100) shall apply. With respect to any Order that includes valves ("Valves") as Products, a minimum Order charge of Three Hundred Fifty USD (\$350) shall apply.

**12. RETURN OF PRODUCTS:** No Products shall be returned to Powell without Powell's prior written agreement. Products returned by Purchaser shall be returned in the same condition as when delivery was affected by Powell. Only Products that are new, unused and in a condition suitable for immediate resale shall be considered for return. Powell reserves the right to assess a minimum thirty-five percent (35%) restocking charge for Products returned for reasons other than defects or non-conformity.

## GENERAL TERMS AND CONDITIONS OF SALE

**13. CANCELLATION/SUSPENSION:** Purchaser shall not cancel or suspend an Order without Powell's prior written consent, which such consent Powell shall be under no obligation to provide. In the event of cancellation or suspension of an Order without Powell's prior written consent, in addition to Powell's other rights and remedies available hereunder and under applicable law, Purchaser shall pay cancellation charges as follows: (a) Order entered in Powell's system, but no engineering yet initiated, 5%, (b) Engineering work has begun and orders for casings and/or outside purchased parts have been placed, 25%, (c) Castings poured and/or components made, but not yet received at Powell's location, 75%, (d) Castings poured and/or components made and received at Powell's location, 85%, (e) Manufacturing process started, 95% and (f) Components finished, 100%.

Powell may cancel all or part of an Order immediately upon the happening of any of the following: Purchaser is delinquent on any of its obligations hereunder or under any order or transaction with Powell, insolvency of Purchaser; the appointment of a custodian as that term is defined in Title 11 U.S.C., as amended (the "Bankruptcy Code"), or the commencement of a case under any chapter of the Bankruptcy Code or the bankruptcy, receivership, insolvency or similar laws of any country for, by or against Purchaser; Purchaser's suspension or termination of business or assignment for the benefit of creditors; or any event, whether or not similar to the foregoing, which materially impairs Purchaser's ability to perform hereunder. Powell's rights to cancel or postpone set forth herein may be exercised by Powell without liability.

**14. CORRECTIONS:** Powell reserves the right to make corrections to price lists, quotations, invoices or other contract documents in the event of clerical or typographical errors.

**15. COUNTRY OF ORIGIN:** Powell reserves the right to furnish Products from any of its plants at its sole discretion and does not represent that the Products listed herein originate from any specific country. Any costs affected by country of origin, including, but not limited to, customs duties, are not included in the purchase price and are for Purchaser's account.

**16. INFORMATION REGARDING PRODUCTS:** Purchaser acknowledges that it has received and is familiar with Powell's and any other manufacturer's labeling and literature concerning the Products and will forward such information to its employees, agents and customers.

**17. POWELL PRODUCT WARRANTY:** For a period of (a) ninety (90) days from tender of delivery with respect to Parts and (b) the earlier of (i) eighteen (18) months from tender of delivery or (ii) twelve (12) months from installation with respect to Valves, Powell warrants to Purchaser that the Parts and/or Valves, as applicable, of its own manufacture are free of defects in material and workmanship, under normal use and proper operation. If any such Products fail to comply with such warranty, Powell, at Powell's option, shall either: (i) replace such defective Products; (ii) furnish replacement parts for repairing Products (iii) issue written authorization for Purchaser or others to replace or repair, without charge to Purchaser, at costs comparable to Powell's normal manufacturing costs, those parts proven defective; or (iv) refund all monies paid by Purchaser to Powell for such Products and, at the sole discretion of Powell, have the Products returned to Powell at Powell's expense. Finished materials and accessories purchased from other manufacturers are warranted only to the extent of the manufacturer's warranty to Powell (to the extent transferable by Powell to Purchaser). Any alteration in material or design of the Products or component parts thereof by Purchaser or others and/or the undertaking of repairs or replacement by Purchaser or its agents without Powell's written consent shall relieve Powell of all responsibility herewith.

Powell's obligations under this warranty shall be conditioned upon (a) Purchaser's notifying Powell of any alleged defect(s) in a writing that references Purchaser's Order number and provides complete identification of any allegedly defective Products within ten (10) days of the discovery of the damage or defect, and (b) Powell's satisfying itself upon inspection that its warranty has been breached. Purchaser may not bring any action under or arising from an Order or these Terms and Conditions unless such action is commenced within one year after the cause of action accrues.

EXCEPT AS SET FORTH IN THIS SECTION 17, POWELL MAKES NO WARRANTY CONCERNING THE PRODUCTS WHATSOEVER; POWELL DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION,

WARRANTIES OF NON-INFRINGEMENT AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE OBLIGATIONS SET FORTH IN THIS SECTION 17 ARE POWELL'S SOLE OBLIGATIONS AND PURCHASER'S EXCLUSIVE REMEDY. POWELL SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, AND PURCHASER HEREBY WAIVES, FOR ITSELF AND ITS SUCCESSORS AND ASSIGNS, (A) ANY AND ALL CLAIMS FOR PUNITIVE DAMAGES AND (B) ALL CLAIMS OF NEGLIGENCE OR STRICT LIABILITY OR BOTH. WITHOUT LIMITATION TO THE FOREGOING, IN NO EVENT SHALL POWELL BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT OR FOR THE LOSS OF USE OF ANY OTHER PRODUCT, PROCESS, EQUIPMENT, OR FACILITIES OF PURCHASER OR OF THE END-USER, WHETHER PARTIALLY OR WHOLLY DUE TO DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DESIGN OF POWELL'S PRODUCT, AND IN NO EVENT SHALL POWELL BE LIABLE FOR REMOVAL OF APPURTENANCES OR INCIDENTALS SUCH AS CONNECTIONS, PIPE WORK AND SIMILAR ITEMS OF OBSTRUCTION OR FOR ANY COSTS BROUGHT ABOUT BY NECESSITY OF REMOVING THE PRODUCT FROM ITS POINT OF INSTALLATION.

Purchaser (a) recognizes that the limitations contained in this Section 17 are material factors in Powell's sale of the Products at the price(s) specified, and (b) agrees that any accommodation to Purchaser by Powell, whether for sales policy reasons or otherwise, shall not be taken to establish any liability of Powell or any contract term inconsistent with this Agreement.

Purchaser shall neither make nor purport to make (a) any warranty to any person by or on behalf of Powell or (b) any warranty or representation inconsistent with this Section 17.

**18. COMPLIANCE WITH LAWS:** Powell certifies that the Products produced by it, if any, were produced in compliance with all applicable requirements of Sections 6, 7 and 12 of the Fair Labor Standards Act of 1938, as amended, and the Regulations and Orders of the Administrator of the Wage and Hour Division issued under Section 14 thereof.

Powell shall endeavor to comply with all applicable Ohio and United States federal laws. Powell is not responsible for compliance with any other laws or regulations, or with any Product standard or specification, whether of general or particular application, unless Purchaser has furnished specific written notice thereof prior to Powell's entry of Purchaser's Order.

All sales of Products are conditioned upon and subject to strict compliance with United States export control laws, rules and regulations, including, without limitation, the Export Administration Act, the Export Administration Regulations, the Arms Control Act, the International Traffic in Arms Regulations, the Trading With the Enemy Act, the International Economic Powers Act and the Foreign Assets Control Regulations, as they may be amended and supplemented from time to time (each, an "Export Law" and collectively, the "Export Laws"). For any sale of Products requiring a license, permit or other approval under any Export Law ("Restricted Products"), Powell shall determine the feasibility of obtaining such license, permit or other approval ("Export Approval") and whether it will fill the order for the Restricted Products in light of required Export Approval. In the event Powell applies for Export Approval for the Restricted Products, it shall do so at Purchaser's cost and expense and Purchaser agrees to reimburse Powell for any cost or expenses (including Powell's reasonable attorneys' fees) incurred by Powell in pursuing Export Approval. Powell shall not be under any obligation to ship any such Restricted Products unless and until such Export Approval is granted, and only in strict compliance with the terms and conditions of such Export Approval. Purchaser shall be responsible for timely obtaining and maintaining any required import license, permit or approval necessary to import any Restricted Products into Purchaser's country and any other required governmental authorization ("Import Approval"). Powell shall not be liable if any Export Approval or Import Approval is delayed, denied, revoked, restricted or not renewed, and Purchaser shall not be relieved thereby of its obligations to pay Powell for the Restricted Products or Powell's costs and expenses of obtaining Export Approval in respect of Restricted Products under the Export Laws.

## GENERAL TERMS AND CONDITIONS OF SALE

For Products other than Restricted Products, Purchaser (or its designated export agent) shall be responsible for the timely application for any required export authorization and the payment of any required fees, duties, taxes, tariffs, levies or other charges necessary to export the Products out the United States of America and shall be responsible for timely obtaining and maintaining any required Import Approval and the payment of any required fees, duties, taxes, tariffs, levies or other charges necessary to import the Products into Purchaser's country. Powell shall not be liable if any export authorization or Import Approval is delayed, denied, revoked, restricted or not renewed, and Purchaser shall not be relieved thereby of its obligations to pay Powell for the Products.

Purchaser shall not make any disposition of any Products purchased hereunder, by way of transshipment, reexport, diversion or otherwise, other than in and to the ultimate end user and country of destination specified on Purchaser's order or declared as the ultimate end user and country of ultimate destination on Powell's invoices, except as the Export Laws or Export Approval may expressly permit. Purchaser shall not distribute or resell any Product to or within any country or to any individual, government authority or other entity that is presently or at any time in the future subject to sanctions of the United States government, or is in violation of any Export Laws or other United States federal laws, statutes, codes, Executive Orders, decrees, rules or regulations relating to terrorism, drug trafficking or money laundering, or is designated under any such authority as being subject to sanctions or connected in any way to terrorism, drug trafficking or money laundering, including, without limitation, on the Specially Designated Nationals List and Block Persons List maintained by the Office of Foreign Assets Control (OFAC), United States Department of the Treasury, and the Denied Persons List, the Entity List and the Unverified List maintained by the Bureau of Industry and Security, United States Department of Commerce.

Purchaser shall indemnify and hold harmless Powell from and against any damages, liabilities or expenses of any kind incurred by Powell as a result of Purchaser's direct or indirect breach of any term or condition related to the Export Laws.

**19. SAFETY:** Purchaser warrants that it will comply with all laws, regulations, standards and requirements which are applicable to the use of the Products and Purchaser's business.

**20. CONFIDENTIALITY:** Purchaser will not disclose or otherwise disseminate, directly or indirectly, any of the terms of these Terms and Conditions or any other information of Powell given to or received by Purchaser or its associates or agents, unless Purchaser received Powell's written permission or such information is required to be disclosed by law or becomes part of the public domain through no fault of Purchaser, its associates or agents.

**21. GOVERNING LAW; JURISDICTION AND VENUE:** These Terms and Conditions shall be governed by and construed in accordance with the internal laws of the State of Ohio, without regard to such state's choice of law principles. These Terms and Conditions shall not be governed by or construed in accordance with the United Nations Convention on the International Sale of Goods, 1980, for any purpose. Customer and Powell hereby submit to the jurisdiction and venue of the state and federal courts in Cincinnati, Hamilton County, Ohio over any controversy relating to or arising from these Terms and Conditions. Notwithstanding the foregoing, Powell's right to institute or defend any proceedings in any jurisdiction, in or out of the United State of America, shall not be limited.

**22. SEVERABILITY:** If any of the provisions of these Terms and Conditions are deemed invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions will in no way be affected or impaired thereby.

**23. FORCE MAJEURE:** Delivery of all or any part of the Products is contingent upon Powell's ability to obtain supplies, raw materials and services through its regular and usual sources of supply. If by reason of any contingency beyond Powell's reasonable control, including (but not limited to) war, governmental requests, restrictions or regulations, fire, flood, casualty, accident, or other acts of God, strikes or other difficulties with employees, delay or inability to obtain labor, equipment, material and services through Powell's usual sources, failure or refusal of any carrier to transport materials, delay in transport thereof, or any other similar occurrence, Powell is not able to meet anticipated deliveries, Powell shall not be liable therefore and may, in its

discretion without prior notice to Purchaser, postpone the delivery date(s) under this document for a time which is reasonable under all the circumstances. If during the occurrence of any of the foregoing contingencies, Powell holds any of the Products, Powell may invoice and hold the same for the account of Purchaser and Purchaser agrees to make payment at the maturity of the invoice so rendered.

**24. ASSIGNMENT:** No right or interest in the contract arising from these Terms and Conditions shall be assigned by Purchaser and no delegation of any obligation owed by Purchaser shall be made without the prior written permission of Powell. As used herein, "Purchaser" and "Powell" include the respective heirs, executors, personal representatives, successors and permitted assigns of each.

**25. REMEDIES CUMULATIVE; NO WAIVER:** The individual rights and remedies of Powell reserved herein shall be cumulative and additional to any other or further remedies provided in law or equity or in this document. Waiver by Powell of performance or breach of any provision hereof by Purchaser, or failure of Powell to enforce any provision hereof which may establish a defense or limitation of liability, shall not be deemed a waiver of future compliance therewith or a course of performance modifying such provision, and such provision shall remain in full force and effect as written.

**26. LIMITATION OF LIABILITY:** UNDER NO CIRCUMSTANCES SHALL POWELL BE LIABLE TO PURCHASER UNDER OR IN CONNECTION WITH ORDERS FOR PRODUCTS AND THESE TERMS AND CONDITIONS, WHETHER ANY CLAIM FOR RECOVERY IS BASED UPON OR ARISES OUT OF THEORIES OF BREACH OF CONTRACT, BREACH OF WARRANTY, INDEMNIFICATION, NEGLIGENCE, TORT (INCLUDING STRICT LIABILITY) OR OTHERWISE, IN EXCESS OF AN AMOUNT EQUAL TO THE NET CONTRACT VALUE OF THE PRODUCTS PROVIDED BY POWELL TO PURCHASER DURING THE MOST RECENTLY ENDED CALENDAR QUARTER.

## Manufacturing, Sales and Distribution Centers:

### Global Corporate Headquarters

2503 Spring Grove Ave.  
Cincinnati, OH 45214  
513.852.2000  
Sales and Engineering  
800.888.2583

### Powell South Carolina

Manning Manufacturing and Distribution Center  
1567 Joe Rogers Jr. Blvd.  
Manning, SC 29102

Orangeburg Manufacturing and Distribution Center  
940 Cross Creek Road  
Orangeburg, SC 29115

### Powell Texas

Houston/Stafford Sales and Distribution Center  
Freeport Ninety Business Park  
13843 N. Promenade Blvd.  
Building 5, Suite 650  
Stafford, TX 77477  
800.888.2583

### Powell China

Yancheng Manufacturing, Sales and Distribution Center  
Yancheng City, China



The Wm. Powell Company  
2503 Spring Grove Ave.  
Cincinnati, OH 45214  
USA Phone: 513.852.2000, Fax: 513.852.2997  
www.powellvalves.com  
quotes@powellvalves.com



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Powell Valves  
NextGen Engineering