

# Grooved System for Stainless Steel Pipe – Valves

## Vic-Ball Valve

### SERIES 726S

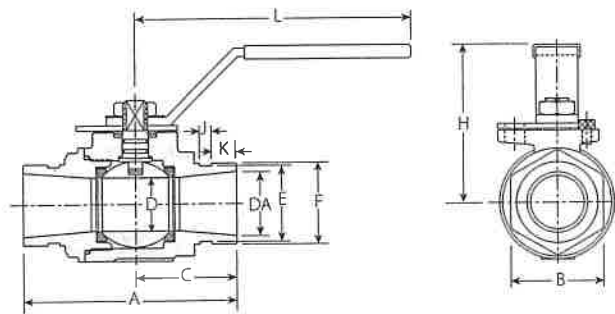
For Complete Information  
Request Publication **17.22**



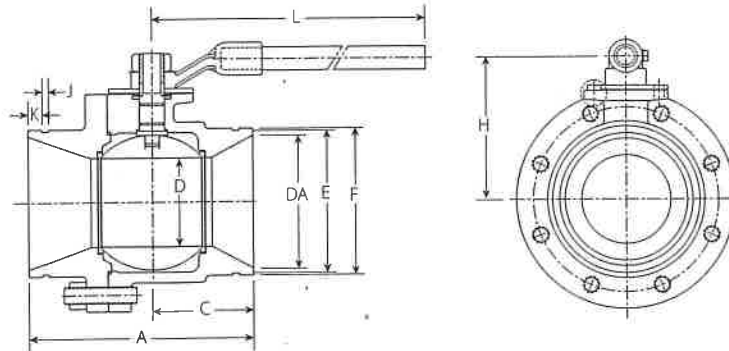
Size		Dimensions												Approx. Wgt. Each	Flow Coefficient@ (Fully Open)
Nominal Size Inches mm	Actual Outside Diameter Inches mm	A Inches mm	B Inches mm	C Inches mm	D Inches mm	DA Inches mm	E Inches mm	F Inches mm	H Inches mm	J Inches mm	K Inches mm	L Inches mm	Lbs. kg	C <sub>v</sub> Values K <sub>v</sub> Values	
1½ 40	1.900	5.12	2.00	2.36	1.25	1.50	1.78	1.90	3.00	0.28	0.56	6.97	4.7	130	
	48.3	130	51	60	32	38	45	48	76	7	14	177	2.1	112.5	
2 50	2.375	5.50	2.64	2.48	1.50	2.00	2.25	2.38	3.31	0.34	0.56	6.97	7.5	180	
	60.3	140	67	63	38	51	57	60	84	9	14	177	3.4	155.7	
2½ 65	2.875	6.25	3.03	2.80	1.97	2.50	2.72	2.88	4.00	0.34	0.56	9.84	11.5	340	
	73.0	159	77	71	50	64	69	73	102	9	14	250	5.2	294.1	
3 80	3.500	6.56	3.50	3.15	2.50	3.00	3.34	3.50	4.53	0.34	0.56	9.84	17.3	600	
	88.9	167	89	80	64	76	85	89	115	9	14	250	7.8	519.0	
4 100	4.500	8.25	—	3.35	2.99	4.00	4.33	4.52	5.48	0.34	0.61	15.67	44.0	650	
	114.3	210	—	85	76	102	111	115	139	9	15	398	20.5	562.3	
6 150	6.625	10.10	—	4.53	4.00	6.00	6.46	6.64	6.48	0.34	0.61	18.07	82.0	800	
	168.3	257	—	115	102	152	164	169	165	9	15	459	37.3	692.0	

@ C<sub>v</sub>/K<sub>v</sub> values for flow of water at +60°F/+16°C with valve fully open.

- High-pressure standard port ball valve with grooved ends
- Two-piece, end-entry features floating ball for lower torque requirements
- NACE compliant
- Streamline internal design provides excellent flow characteristics
- Valve features stainless steel ball and stem
- Pressure rated up to 1000psi/6900kPa for sizes 1½–3¾/40–80mm
- Pressure rated up to 800psi/5515kPa for sizes 4–6"/100–150mm
- Sizes from 1½–6"/40–150mm



TYPICAL 1½–3¾/40–80 mm SIZES



TYPICAL 4"/100 mm AND 6"/150 mm SIZES

# Victaulic® Vic-300 MasterSeal™ Stainless Steel Butterfly Valves



## Series 461 and Series E461

17.40



Series 461



Series E461

### 1.0 PRODUCT DESCRIPTION

#### Available Sizes

- Series 461: 2 – 12"/DN50 – DN300
- Series E461: 2 – 6"/DN50 – DN150

#### Maximum Working Pressure

- 300 psi/2100 kPa/21 bar
- Full working pressure for bi-directional, dead end services

#### Operating Temperature

- Dependent on seat selection from section 3.0

#### Application

- Typically used in potable water, HVAC and other systems where full stainless steel wetted construction is required

#### End Preparation (specify choice)

- Original Groove System (OGS) (Series 461)
- StrengThin™ 100 Groove System (Series E461)

#### Actuation Options

- Standard ISO 5211 mounting flange
- 10-position handle (2 – 6"/DN50 – DN150)
  - Infinitely variable service with memory stop; Padlockable
- Lever lock handle (8"/DN200)
  - Infinitely variable service with memory stop; Padlockable
- Gear operator (2 – 12"/DN50 – DN300)
  - Three-way assemblies
- Accommodates 2"/50 mm of insulation
  - 2 – 8"/DN50 – DN200: 4 ½"/120 mm-long handle wheel input shaft extension
  - 10 – 12"/DN250 – DN300: 3 ½"/90 mm-long handle wheel input shaft extension

#### NOTES

- A padlockable valve refers to those valves which can be padlocked to lockout equipment for preventing inadvertent valve operation. When used in conjunction with an appropriate lockout/tagout system, multiple padlocks may be used. The valve may be padlocked either fully open or fully closed.
- A tamper-resistant option is also available, which is meant to deter theft, vandalism or other malicious activity. The handles and associated components are assembled with tamper-resistant fasteners which are designed for one-time assembly. Attempts to defeat the padlock by partial disassembly of the valve will likely result in evidence of such activity. The valve may be padlocked either fully open or fully closed.
- Hand wheel input shaft extensions are not for use with chain wheels.

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

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	



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## 2.0 CERTIFICATION/LISTINGS

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When utilizing a Victaulic EPDM seat, the Series 461 and Series E461 are NSF Certified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372.

Valve construction and performance meet or exceed MSS-SP-67 requirements.

**NOTE**

- See [publication 02-06](#): Victaulic Approvals for Potable Water Products - ANSI/NSF 61 and ANSI/NSF 372 for more details.

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## 3.0 SPECIFICATIONS - MATERIAL

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### SERIES 461 AND SERIES E461

**Body:** Stainless steel conforming to ASTM A351 Grade CF8M.

**End Face, 2 – 6"/DN50 – DN150:** Stainless steel conforming to ASTM A351 Grade CF8M.

**Seal Retainer, 8 – 12"/DN200 – DN300:** Stainless steel conforming to ASTM A351 Grade CF8M.

**Disc:** Stainless steel conforming to ASTM A351 Grade CF8M.

**Seat: (specify choice)**

- Victaulic EPDM**  
(Green color code). Temperature range –30°F to +230°F/–34°C to +110°C. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT RECOMMENDED FOR PETROLEUM AND STEAM SERVICES.
- Victaulic Nitrile**  
(Orange color code). Temperature range +10°F to +150°F/–12°C to +65°C. Not compatible for hot water services over +150°F/+66°C or for hot dry air over +140°F/60°C. NOT RECOMMENDED FOR HOT WATER SERVICES.

**Stems:** 17-4PH stainless steel conforming to ASTM A564.

**Stem Seal Cartridge:** 17-4PH stainless steel conforming to ASTM A564.

**Bearings:** Fiberglass and 316 stainless steel with TFE lining.

**Stem Seals:** Furnished in same materials as seat.

**Stem Retaining Ring:** Stainless steel.

**Handle:** 10 Position.

- For sizes 2 – 6"/DN50 – DN150: Zinc-plated carbon steel handle with zinc-plated carbon steel latch plate and zinc-plated carbon steel fasteners, infinitely variable and padlockable and includes memory stop. Optionally available with tamper-resistant hardware.
- For sizes 2 – 6"/DN50 – DN150: Stainless steel handle with Grade 304 stainless steel latch plate and stainless steel fasteners, infinitely variable and padlockable and includes memory stop. Optionally available with tamper-resistant hardware.

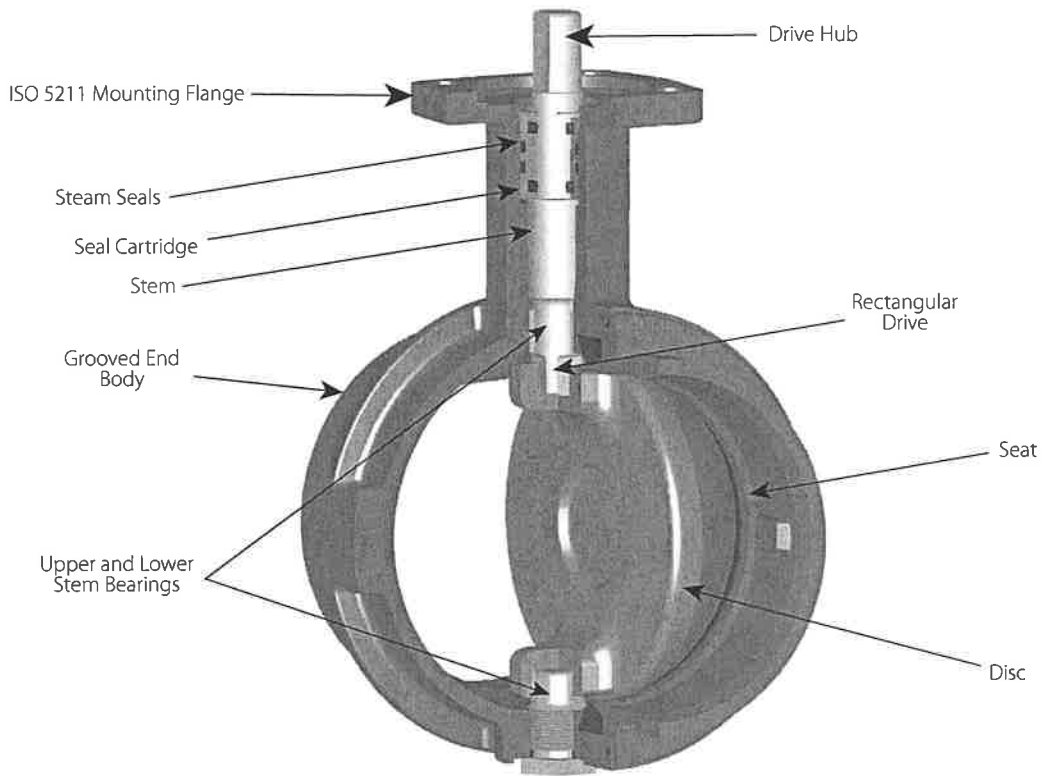
**Handle:** Lever Lock

- For sizes 8"/DN200: Painted ductile iron conforming to ASTM A536, Grade 65-45-12, with carbon steel latch plate and zinc-plated carbon steel fasteners.
- For sizes 8"/DN200: Stainless steel conforming to ASTM A564, with Grade 304 stainless steel latch plate and stainless steel fasteners.
- For sizes 8"/DN200: Infinitely variable and padlockable and includes memory stop. Optionally available with tamper-resistant hardware.

**Gear Operator with options below:**

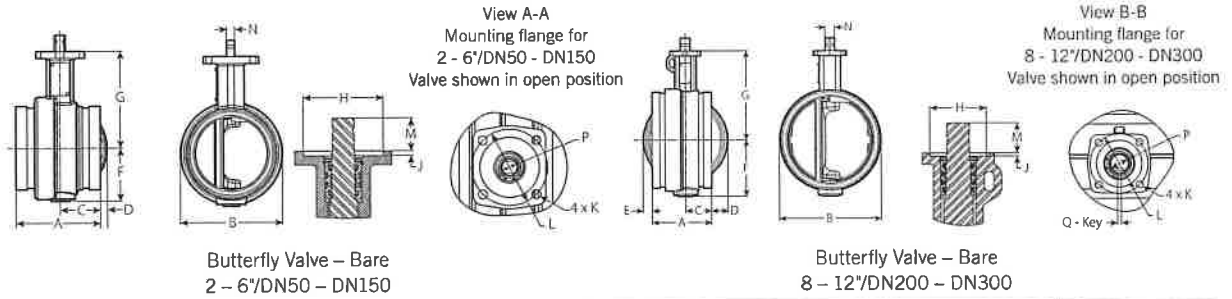
- Hand wheel with memory stop
- Hand wheel with chainwheel
- 2" square nut

3.0 SPECIFICATIONS - MATERIAL (Continued)



4.0 DIMENSIONS

Series 461



Butterfly Valve – Bare  
2 – 6"/DN50 – DN150

Butterfly Valve – Bare  
8 – 12"/DN200 – DN300

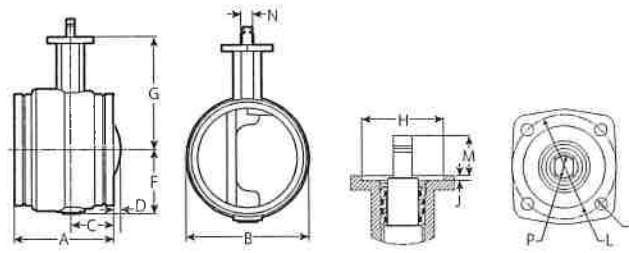
Size		Dimensions																Weight
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	B inches mm	C inches mm	D inches mm	E inches mm	F inches mm	G inches mm	H inches mm	J inches mm	K inches mm	L inches mm	M inches mm	N inches mm	P inches mm	Q-Key inches mm	Approx. (Each) lb kg	
2 DN50	2.375 60.3	3.25 83	3.25 83	1.50 38	– –	– –	1.88 48	3.75 95	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	– –	3.8 1.7	
2 ½	2.875 73.0	3.75 95	4.13 105	1.75 44	– –	– –	2.13 54	4.25 108	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	– –	5.8 2.6	
DN65	3.000 76.1	3.75 95	4.13 105	1.75 44	– –	– –	2.13 54	4.25 108	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	– –	6.0 2.7	
3 DN80	3.500 88.9	3.75 95	4.63 117	1.75 44	– –	– –	2.38 60	4.5 114	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	– –	6.9 3.1	
4 DN100	4.500 114.3	4.63 117	5.50 140	2.13 54	– –	– –	2.88 73	5.25 133	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.63 16	– –	11.1 5.0	
DN125	5.500 139.7	5.88 149	6.25 159	2.63 67	– –	– –	3.38 86	6.25 159	2.13 54	0.13 3	0.38 10	2.75 70	1.00 25	0.50 13	0.75 19	– –	18.4 8.4	
	6.500 165.1	5.88 149	7.25 184	2.63 67	0.38 10	– –	3.88 98	6.75 171	2.13 54	0.13 3	0.38 10	2.75 70	1.00 25	0.50 13	0.75 19	– –	22.3 10.1	
6 DN150	6.625 168.3	5.88 149	7.25 184	2.63 67	0.38 10	– –	3.88 98	6.75 171	2.13 54	0.13 3	0.38 10	2.75 70	1.00 25	0.50 13	0.75 19	– –	22.8 10.3	
8 DN200	8.625 219.1	5.38 137	9.25 235	2.38 60	1.50 38	0.75 19	5.13 130	8.00 203	2.13 54	0.13 3	0.38 10	2.75 70	1.13 29	– –	0.88 22	0.13 3	38.4 17.4	
10 DN250	10.750 273.0	6.40 163	11.22 285	3.00 76	1.81 46	1.41 36	6.37 162	9.75 248	2.76 70	0.13 3	0.43 11	4.02 102	2.25 61	– –	1.25 32	0.31 8	66.9 30.3	
12 DN300	12.750 323.9	6.50 165	13.33 339	3.00 76	2.80 71	2.30 58	7.36 187	10.75 273	2.76 70	0.13 3	0.43 11	4.02 102	2.25 57	– –	1.25 32	0.31 8	85.3 38.7	

NOTE

- 2 – 8"/DN50 – DN200 sizes are ISO 5211 Flange Designation F07. 10 – 12"/DN250 – DN300 sizes are ISO 5211 Flange Designation F10.

4.1 DIMENSIONS

Series E461



View A-A  
Mounting flange for  
2 - 6"/DN50 - DN150  
Valve shown in open position

Butterfly Valve – Bare  
2 – 6"/DN50 – DN150

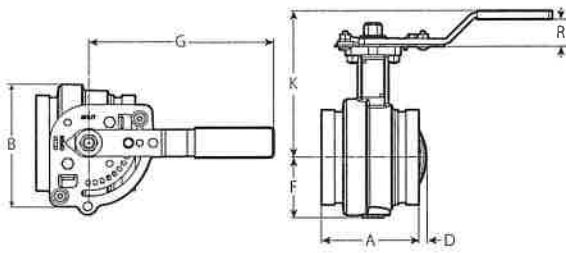
Size		Dimensions													Weight
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	B inches mm	C inches mm	D inches mm	F inches mm	G inches mm	H inches mm	J inches mm	K inches mm	L inches mm	M inches mm	N inches mm	P inches mm	Approx. (Each) lb kg
2 DN50	2.375 60.3	3.63 92	3.25 83	1.63 41	- -	1.88 48	3.75 95	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	3.7 1.7
DN65	3.000 76.1	4.13 105	4.13 105	1.88 48	- -	2.13 54	4.25 108	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	6.0 2.7
3 DN80	3.500 88.9	4.00 102	4.63 117	1.75 44	- -	2.38 60	4.50 114	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.38 10	6.7 3.0
4 DN100	4.500 114.3	4.75 121	5.50 140	2.13 54	- -	2.88 73	5.25 133	2.13 54	0.13 3	0.38 10	2.75 70	0.88 22	0.38 10	0.63 16	11.3 5.1
DN125	5.500 139.7	5.88 149	6.25 159	2.63 67	- -	3.38 86	6.25 159	2.13 54	0.13 3	0.38 10	2.75 70	1.00 25	0.50 13	0.75 19	18.0 8.2
6 DN150	6.625 168.3	6.00 152	7.25 184	2.63 67	0.38 10	3.88 98	6.75 171	2.13 54	0.13 3	0.38 10	2.75 70	1.00 25	0.50 13	0.75 19	23.0 10.4

NOTE

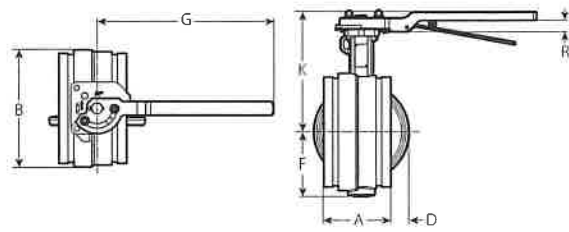
- 2 – 6"/DN50 – DN150 sizes are ISO 5211 Flange Designation F07.

## 4.2 DIMENSIONS

### Series 461



Butterfly Valve - 10 Position Lever Handle 2 - 6'/DN50 - DN150



Butterfly Valve - Lever Lock Handle 8'/DN200

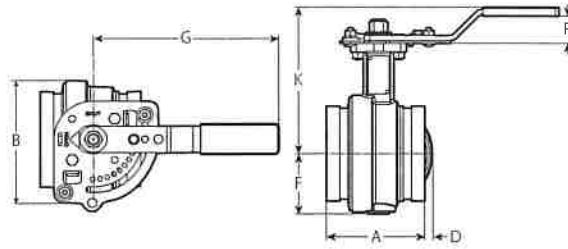
Size		Dimensions							Weight	
Nominal inches DN	Actual Outside Diameter inches mm	A inches mm	B inches mm	D inches mm	F inches mm	G inches mm	K inches mm	R inches mm	Approximate (Each) lb kg	
2	2.375	3.25	3.25	-	1.88	7.00	5.38	1.63	5.0	
DN50	60.3	83	83	-	48	178	137	41	2.3	
2 1/2	2.875	3.75	4.13	-	2.13	7.00	5.88	1.63	7.0	
	73.0	95	105	-	54	178	149	41	3.2	
DN65	3.000	3.75	4.13	-	2.13	7.00	5.88	1.63	7.2	
	76.1	95	105	-	54	178	149	41	3.3	
3	3.500	3.75	4.63	-	2.38	7.00	6.13	1.63	8.1	
DN80	88.9	95	117	-	60	178	156	41	3.7	
4	4.500	4.63	5.50	-	2.88	8.50	6.75	1.63	12.8	
DN100	114.3	117	140	-	73	216	171	41	5.8	
DN125	5.500	5.88	6.25	-	3.38	12.00	7.88	1.63	21.5	
	139.7	149	159	-	86	305	200	41	9.8	
	6.500	5.88	7.25	0.38	3.88	12.00	8.38	1.63	25.4	
	165.1	149	184	10	98	305	213	41	11.5	
6	6.625	5.88	7.25	0.38	3.88	12.00	8.38	1.63	25.9	
DN150	168.3	149	184	10	98	305	213	41	11.7	
8	8.625	5.38	9.25	0.38	5.13	14.00	9.5	0.75	47.5	
DN200	219.1	137	235	10	130	356	241	19	21.5	

**NOTE**

- 2 - 8'/DN50 - DN200 sizes are ISO 5211 Flange Designation F07.

### 4.3 DIMENSIONS

#### Series E461



Butterfly Valve - 10 Position Lever Handle  
2 - 6"/DN50 - DN150

Size		Dimensions							Weight
Nominal inches DN	Actual Outside Diameter inches mm	A inches mm	B inches mm	D inches mm	F inches mm	G inches mm	K inches mm	R inches mm	Approximate (Each) lb kg
2	2.375	3.63	3.25	-	1.88	7.00	5.38	1.63	4.9
DN50	60.3	92	83	-	48	178	137	41	2.2
	3.000	4.13	4.13	-	2.13	7.00	5.88	1.63	7.2
DN65	76.1	105	105	-	54	178	149	41	3.3
3	3.500	4.00	4.63	-	2.38	7.00	6.13	1.63	7.9
DN80	88.9	102	117	-	60	178	156	41	3.6
4	4.500	4.75	5.50	-	2.88	8.50	6.75	1.63	13.0
DN100	114.3	121	140	-	73	216	171	41	5.9
	5.500	5.88	6.25	-	3.38	12.00	7.88	1.63	21.1
DN125	139.7	149	159	-	86	305	200	41	9.6
6	6.625	6.00	7.25	0.38	3.88	12.00	8.38	1.63	26.1
DN150	168.3	152	184	10	98	305	213	41	11.8

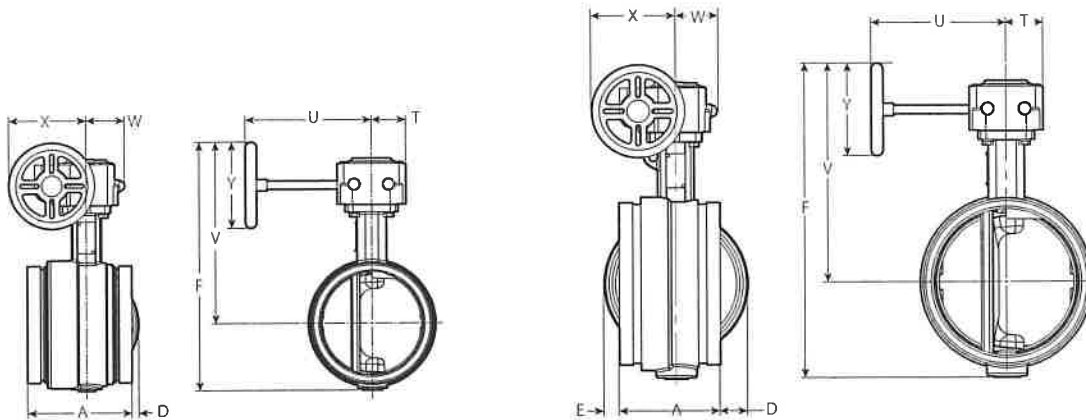
**NOTE**

- 2 - 6"/DN50 - DN150 sizes are ISO 5211 Flange Designation F07.



## 4.4 DIMENSIONS

### Series 461



Butterfly Valve – Gear Operator  
2 – 6"/DN50 – DN150

Butterfly Valve – Gear Operator  
8 – 12"/DN200 – DN300

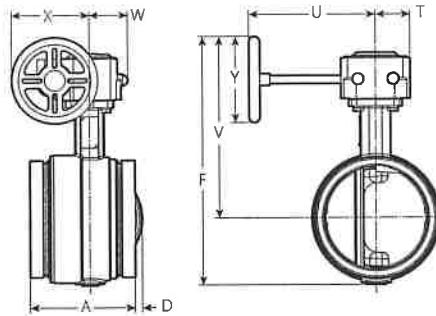
Size		Dimensions										Weight
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	D inches mm	E inches mm	F inches mm	T inches mm	U inches mm	V inches mm	W inches mm	X inches mm	Y inches mm	Approximate (Each) lb kg
2	2.375	3.25	-	-	8.63	1.63	4.75	6.88	1.88	3.63	4.00	6.3
DN50	60.3	83	-	-	219	41	121	175	48	92	102	2.9
2 1/2	2.875	3.75	-	-	9.50	1.63	4.75	7.25	1.88	3.63	4.00	8.3
	73.0	95	-	-	241	41	121	184	48	92	102	3.8
	3.000	3.75	-	-	9.50	1.63	4.75	7.25	1.88	3.63	4.00	8.5
DN65	76.1	95	-	-	241	41	121	184	48	92	102	3.9
3	3.500	3.75	-	-	9.88	1.63	4.75	7.50	1.88	3.63	4.00	9.4
DN80	88.9	95	-	-	251	41	121	191	48	92	102	4.3
4	4.500	4.63	-	-	11.25	1.63	4.75	8.25	1.88	3.63	4.00	13.6
DN100	114.3	117	-	-	286	41	121	210	48	92	102	6.2
	5.500	5.88	-	-	13.25	2.00	7.25	9.75	2.25	4.38	4.88	22.4
DN125	139.7	149	-	-	337	51	184	248	57	111	124	10.2
	6.500	5.88	0.38	-	14.13	2.00	7.25	10.25	2.25	4.38	4.88	26.3
	165.1	149	10	-	359	51	184	260	57	111	124	11.9
6	6.625	5.88	0.38	-	14.13	2.00	7.25	10.25	2.25	4.38	4.88	26.8
DN150	168.3	149	10	-	359	51	184	260	57	111	124	12.2
8	8.625	5.38	1.50	0.75	16.63	2.00	7.25	11.50	2.25	4.38	4.88	42.4
DN200	219.1	137	38	19	422	51	184	292	57	111	124	19.2
10	10.750	6.40	1.81	1.41	21.62	2.87	8.98	15.25	3.11	6.30	7.87	76.5
DN250	273.0	163	46	36	549	73	228	387	79	160	200	34.7
12	12.750	6.50	2.80	2.30	23.60	2.87	8.98	16.25	3.11	6.30	7.87	88.7
DN300	323.9	165	71	58	599	73	228	413	79	160	200	40.2

**NOTE**

- 2 – 8"/DN50 – DN200 sizes are ISO 5211 Flange Designation F07. 10 – 12"/DN250 – DN300 sizes are ISO 5211 Flange Designation F10.

## 4.5 DIMENSIONS

### Series E461



Butterfly Valve – Gear Operator  
2 – 6"/DN50 – DN150

Size		Dimensions									Weight
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	D inches mm	F inches mm	T inches mm	U inches mm	V inches mm	W inches mm	X inches mm	Y inches mm	Approx. (Each) lb kg
2	2.375	3.63	-	8.63	1.63	4.75	6.88	1.88	3.63	4.00	6.2
DN50	60.3	92	-	219	41	121	175	48	92	102	2.8
	3.000	4.13	-	9.50	1.63	4.75	7.25	1.88	3.63	4.00	8.5
DN65	76.1	105	-	241	41	121	184	48	92	102	3.9
3	3.500	4.00	-	9.88	1.63	4.75	7.5	1.88	3.63	4.00	9.2
DN80	88.9	102	-	251	41	121	191	48	92	102	4.2
4	4.500	4.75	-	11.25	1.63	4.75	8.25	1.88	3.63	4.00	13.8
DN100	114.3	121	-	286	41	121	210	48	92	102	6.3
	5.500	5.88	-	13.25	2.00	7.25	9.75	2.25	4.38	4.88	22.0
DN125	139.7	149	-	337	51	184	248	57	111	124	10.0
6	6.625	6.00	0.38	14.13	2.00	7.25	10.25	2.25	4.38	4.88	27.0
DN150	168.3	152	10	359	51	184	260	57	111	124	12.2

**NOTE**

- 2 – 6"/DN50 – DN150 sizes are ISO 5211 Flange Designation F07.

## 4.6 DIMENSIONS

### SERIES 461 AND SERIES E461

#### Accessories

##### Chain Wheels

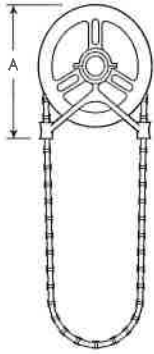
Chain wheels are mounted to the gear operator hand wheels. Sprocket rim and guide arms are made of cast aluminum. Chain is galvanized steel.

##### HOW TO ORDER:

Specify type valve and operator by valve numbering system shown on page 15.

Always specify length of chain required.

For insulation and locking device, contact Victaulic for details. Hand wheel input shaft extensions are not for use with chain wheels.



Chain Wheel and Guide  
with Safety Cable Kit

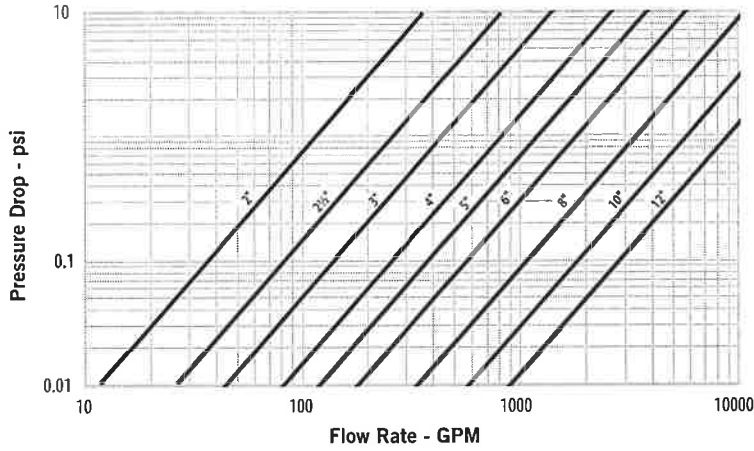
Size	Dimensions			Weight
	Nominal inches mm	Sprocket Size inches mm	Chain Wheel Size (Dia.) inches mm	Approximate (Each) lb kg
2 - 4 50 - 100	0	4.00 102	4.63 118	2.0 0.9
6 - 8 150 - 200	1	5.75 146	6.38 162	4.0 1.8
10 - 12 250 - 300	2	9.00 229	10.50 267	10.0 4.5

## 5.0 PERFORMANCE

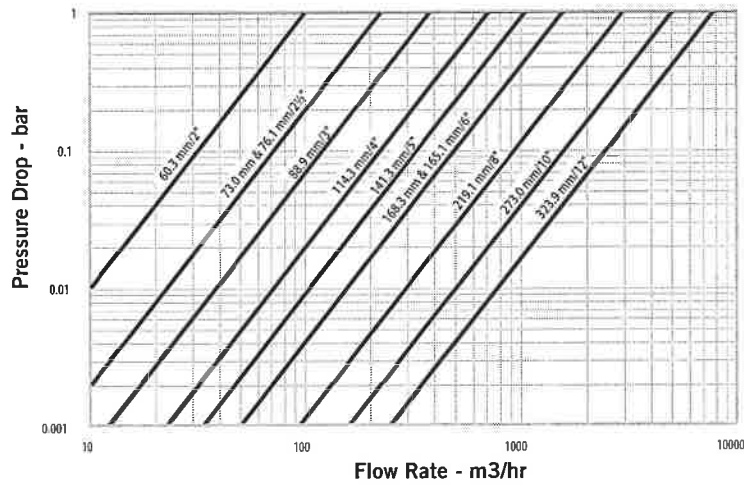
### Series 461 and Series E461

#### Flow Characteristics

Flowchart



Flowchart



## 5.0 PERFORMANCE (Continued)

### Series 461 and Series E461

C<sub>v</sub>/K<sub>v</sub> values for flow of water at +60°F/+16°C with various disc positions are shown in the table below.

Formulas for C<sub>v</sub>/K<sub>v</sub> 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<sub>v</sub> = Flow Coefficient

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

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

Where:

Q = Flow (m<sup>3</sup>/hr)







ΔP = Pressure Drop (Bar)

K<sub>v</sub> = Flow Coefficient

Size		C <sub>v</sub>	K <sub>v</sub>
Nominal inches DN	Actual Outside Diameter inches mm	(Full Open)	(Full Open)
2 DN50	2.375 60.3	115	99
2½	2.875 73.0	260	224
DN65	3.000 76.1	260	224
3 DN80	3.500 88.9	440	379
4 DN100	4.500 114.3	820	707
DN125	5.500 139.7	1200	1034
	6.500 165.1	1800	1552
6 DN150	6.625 168.3	1800	1552
8 DN200	8.625 219.1	3400	2931
10 DN250	10.750 273.0	5800	5000
12 DN300	12.750 323.9	9000	7758

5.0 PERFORMANCE (Continued)

Series 461 and Series E461

Size		Flow Coefficients – Cv/Kv											
Nominal inches DN	Actual Outside Diameter inches mm	Disc Position (Degrees Open)											
		90 		70 		60 		50 		40 		30 	
		Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv
2 DN50	2.375 60.3	115	99	60	52	36	31	23	20	14	12	7	6
2½	2.875 73.0	260	224	140	121	80	69	50	43	30	26	16	14
DN65	3.000 76.1	260	224	140	121	80	69	50	43	30	26	16	14
3 DN80	3.500 88.9	440	379	230	198	140	121	90	78	50	43	26	22
4 DN100	4.500 114.3	820	707	430	321	250	216	160	138	100	86	50	43
DN125	5.500 139.7	1200	1034	620	534	370	319	240	207	140	121	70	60
	6.500 165.1	1800	1552	940	810	560	483	360	310	220	190	110	95
6 DN150	6.625 168.3	1800	1552	940	810	560	483	360	310	220	190	110	95
8 DN200	8.625 219.1	3400	2931	1770	1526	1050	905	670	578	410	353	200	172
10 DN250	10.750 273.0	5800	5000	3020	2603	1800	1552	1150	991	700	603	350	302
12 DN300	12.750 323.9	9000	7758	4680	4034	2790	2405	1780	1534	1080	931	540	465

## 5.0 PERFORMANCE (Continued)

Series 461 and Series E461 Vic-300 MasterSeal™ 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		Torque – Inch Pounds/Newton Meters					
Nominal inches DN	Actual Outside Diameter inches mm	Differential Pressure – psi/bar					
		50/3	100/7	150/10	200/14	232/16	300/21
2	2.375	53	65	78	90	100	115
DN50	60.3	6	7	9	10	11	13
2½	2.875	100	120	140	160	170	200
	73.0	11	14	16	18	19	23
	3.000	100	120	140	160	170	200
DN65	76.1	11	14	16	18	19	23
3	3.500	150	170	190	210	230	260
DN80	88.9	17	19	22	24	26	29
4	4.500	220	250	280	310	330	370
DN100	114.3	25	28	32	35	37	42
	5.500	340	390	450	500	530	600
DN125	139.7	38	44	51	57	60	68
	6.500	410	470	540	600	640	730
	165.1	46	53	61	68	72	83
6	6.625	410	470	540	600	640	730
DN150	168.3	46	53	61	68	72	83
8	8.625	540	680	820	950	1040	1230
DN200	219.1	61	77	93	107	118	139
10	10.750	1610	1920	2230	2530	2730	3150
DN250	273	182	217	252	286	308	356
12	12.750	2720	2880	3040	3190	3290	3510
DN300	323.9	307	325	344	360	372	397

### 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; Lubricated service: 0.8; Dry gases: Lubricated nitrile "T" seat seals may be specified for dry gases wherever chemically appropriate. See material torque factor below.

### Material Torque Factors:

"E" = 1.0; "O" = 1.2; "T" = 0.8

### Cycling Factor:

Torque will typically increase 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:

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.

## 5.0 PERFORMANCE (Continued)

### 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.

### Typical Specifications

Butterfly Valves 2 – 12"/DN50 – DN300: 300 psi/2100 kPa, suitable for bi-directional and dead-end service to full-rated pressure. Grooved end stainless steel body and disc, grade CF8M, conforming to ASTM A351, with blow-out proof 17-4PH stainless steel stems to ASTM A564. Disc shall be connected to the stem without the use of fasteners or pins, and be offset from the disc centerline to provide a full 360° continuous contact with the seating surface when closed. Seat shall be pressure responsive, EPDM or lubricated nitrile. Stem seals shall be of the same material as the seats. Valve shall have standard ISO flange mounting for ease of actuation.

Valve provided with lever handle or gear operator as required. The handle shall be zinc-plated carbon steel or fully stainless steel, latch lock type with infinitely variable and memory stop features. Manufacturer - Victaulic Series 461 or Series E461 Vic-300 MasterSeal™ Valves.

### Series 461 & Series E461 Valve Numbering System

V - 030 - 461 X E - 0

Type	In./mm	Size Code	Series	Disc/Stem	Seat	Operator
V	2/50	020	461	X - 316SS/17-4PH	E - EPDM T - Nitrile	0 - Bare
	2 1/2/65	024	E46			2 - 10-position handle with memory stop
	76.1 mm	761				3 - Gear operator
	3/80	030				4 - Lever lock with tamper-resistant device (8 7/200 mm)
	4/100	040				5 - Gear operator with memory stop
	139.7 mm	139				6 - Gear operator with chain wheel
	165.1 mm	165				7 - Gear operator with memory stop and chain wheel
	6/150	060				8 - Gear operator with AWWA 2" square oper. nut
	8/200	080				X - Stainless steel 10-position handle with memory stop
	10/250	100				
	12/300	120				



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## 5.0 PERFORMANCE (Continued)

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### Important Installation Considerations

When installing a Victaulic butterfly valve into a piping system, follow the instructions supplied with the coupling. Refer to the notes below for applications/limitations.

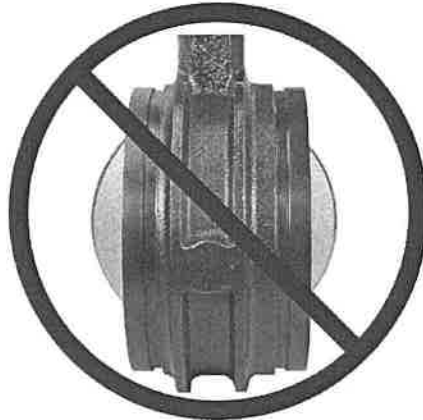
When using butterfly valves for throttling service, Victaulic recommends the disc be positioned no less than 30 degrees open. For best results, the disc should be between 30 and 70 degrees open. High pipeline velocities and/or throttling with the disc less than 30 degrees open may result in noise, vibration, cavitation, severe line erosion, and/or loss of control. For details regarding throttling services, contact Victaulic.

Victaulic recommends that flow velocities for water service are limited to 20 ft. per sec./6.1 m per sec. When higher flow velocities are necessary, contact Victaulic. When dealing with flow media other than water, contact Victaulic.

Victaulic recommends good piping practices and installing the valve five pipe diameters away from other components.

Victaulic butterfly valves are designed with grooved ends for use with grooved pipe couplings. If flange connections are required, refer to the following notes regarding Vic-Flange® Adapter restrictions.

- Style 441 Vic-Flange® Adapters can be used on 2-6" sizes of the Series 461 Vic-300 MasterSeal™ Butterfly Valves.
- Style 741 Vic-Flange® Adapters can be used on all sizes of the Series 461 Vic-300 MasterSeal™ Butterfly Valves.
- Style 743 Vic-Flange® Adapters cannot be used with the Series 461 Vic-300 MasterSeal™ Butterfly Valves. A No. 46 ANSI 300 groove x flange adapter is required.
- Style E498 Vic-Flange® Adapters can be used on all sizes of the Series E461 Vic-300 MasterSeal™ Butterfly Valves.



DO NOT INSTALL BUTTERFLY VALVES INTO THE SYSTEM  
WITH THE DISC IN THE FULLY OPEN POSITION.

## 6.0 NOTIFICATIONS

### WARNING



- Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.
- Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

## 7.0 REFERENCE MATERIALS

[17.16: Victaulic Stainless Steel Fittings](#)

[17.41: Victaulic Stainless Steel Check Valves Series 416 and Series E416](#)

[25.13: Victaulic StrengThin™ 100 Roll Groove Specifications](#)

[31.02: Victaulic StrengThin™ 100 System Style E497 Rigid Coupling for Stainless Steel Pipe](#)

[31.04: Victaulic StrengThin™ 100 Fittings for Stainless Steel](#)

[1-VIC300MS: Installation and Maintenance Instructions - Series 461 VIC-300 MasterSeal™ Stainless Steel Butterfly Valve](#)

### User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning 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, installation guide, or this disclaimer.

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### 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.

### Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of 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 [www.victaulic.com](http://www.victaulic.com).

### Warranty

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

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