



## KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES

### WAFER STYLE

Resilient seated butterfly valves with valve body and disc in high engineered composite material providing excellent internal and external chemical resistance



#### FEATURES

- Patented wafer style body and disc in high engineered composite results in excellent internal and external chemical resistance.
- Light weight construction results in lower cost and simplified installation.
- No extra pipe support needed when installed in plastic or GRP piping.
- Disc in high engineered composite material provides excellent corrosion resistance.
- All fasteners in stainless steel 316 as standard.
- Bubble tight shut-off in both directions, in accordance with EN 12266-1 leakrate A.
- Pressure range up to PN 16 at elevated temperature.
- Valve can be used in high line velocity applications up to 12 m/sec.
- Spindle and primary valve seals are not influenced by the flange bolting force or pipe flange type.
- High  $K_v$  ( $C_v$ ) value.
- No need for flange gaskets.
- Primary stem sealing exceeds the pressure rating of the valve and prevents leakage through the shaft area to atmosphere.
- A secondary (shaft) sealing provides back-up safety.
- 4 integrated locating holes ease installation and centering between the pipe flanges.
- Actuator flange acc. ISO 5211.
- Sustainable production philosophy as the valve materials are 100% recyclable.
- Use of composite material eliminates the need for machining and painting.
- Composite hand lever available.
- Available water approvals: KIWA, ACS, WRAS, NSF, BELGAQUA.
- Certified and approved according Det Norske Veritas (DNV).

#### GENERAL APPLICATION

Since the entire valve exists of high engineered composite materials, it is perfectly suited for a wide range of applications such as; building services, hot water applications, industrial waste water and industrial water treatment like purification, ozone or demineralization. The light weight valve can be perfectly used in transportation and cargo containers and in applications using metal, plastic or glass reinforced pipe lines.

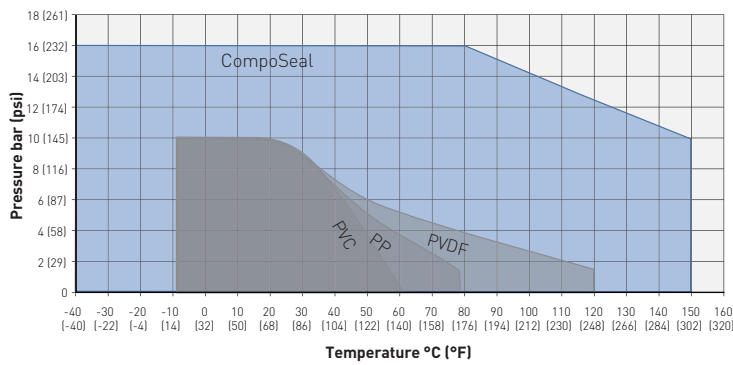
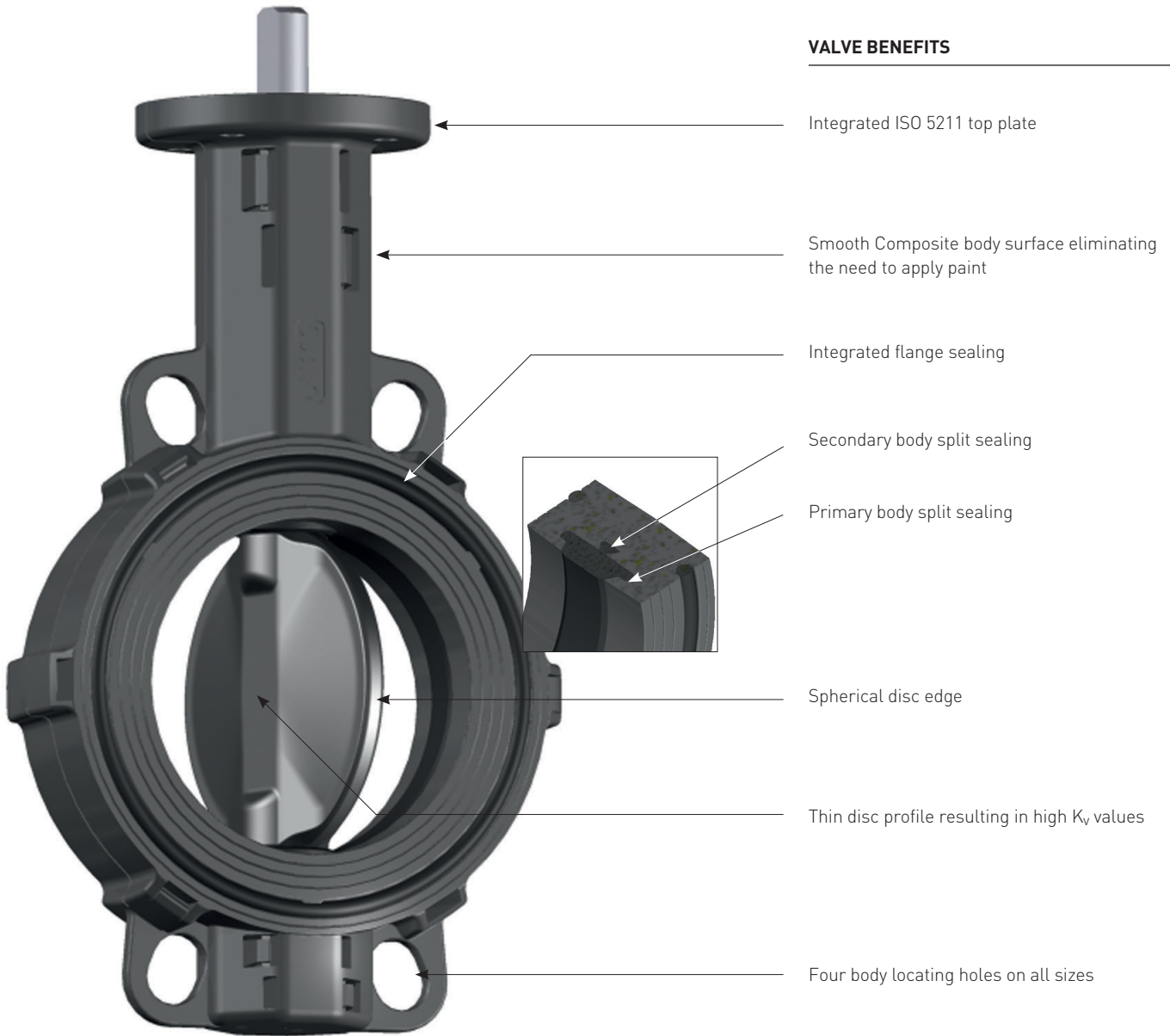
#### TECHNICAL DATA

Size:	DN 40 - 300 (NPS 1.5 - 12)
Temperature:	-40°C up to +150°C (-40°F up to +300°F)
Pressure rating:	10 bar/16 bar (150 psi/232 psi)
Flange connections:	DIN PN 6/10/16 ASME 150 JIS 10K AS 2129 Table E
Face to face:	EN 558-1/T5 API 609

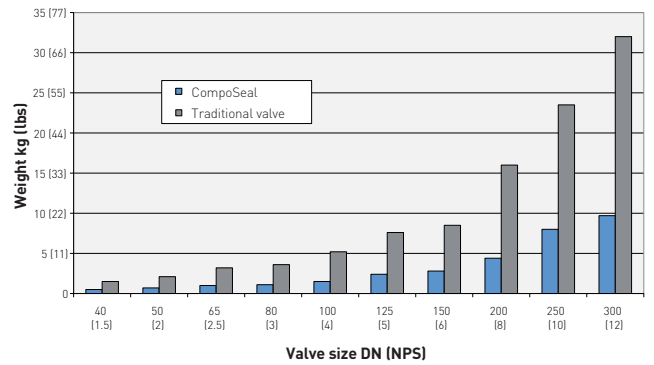


# KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES WAFER STYLE

## VALVE BENEFITS



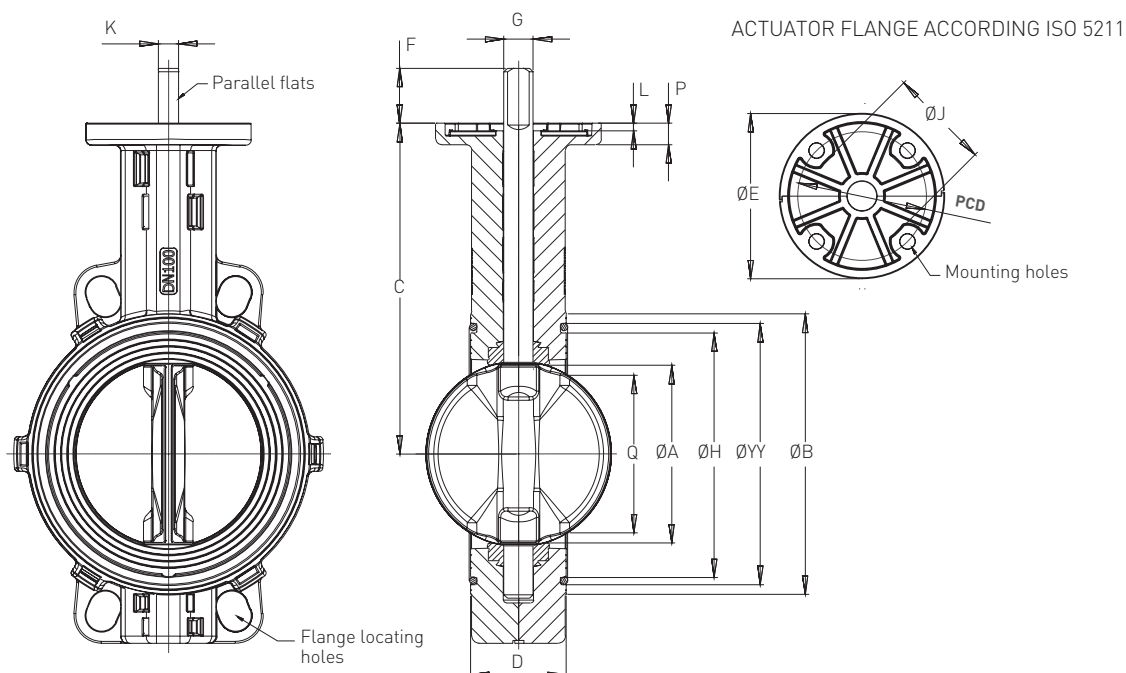
Pressure temperature comparison  
CompoSeal vs. traditional plastic valves such as PVC, PP and PVDF



Weight comparison CompoSeal vs. traditional iron valves

# KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES

## VALVE DATA - METRIC DATA



### VALVE DIMENSIONS (mm)

Size (DN)	A	B	C	D	H	YY	Q	Parallel flats			Type	E	J	L	P	PCD	Hole	Mass (kg)
								G <sub>H9</sub>	F	K <sub>0.05</sub>								
40	40	78	130	33	62	70	25	12	25	8	F-05	65	35	4	10	50	6	0.6
50	52	94	135	43	78	86	31	12	25	8	F-05	65	35	4	10	50	6	0.8
65	62	109	150	46	91	99	43	16	30	11	F-07	90	55	4	12	70	8	1.2
80	78	126	160	46	106	116	65	16	30	11	F-07	90	55	4	12	70	8	1.3
100	100	154	180	52	132	142	87	16	30	11	F-07	90	55	4	12	70	8	1.8
125	125	184	195	56	160	170	113	20	30	14	F-07	90	55	4	15	70	8	2.7
150	150	209	210	56	185	195	142	20	30	14	F-07	90	55	4	15	70	8	3.1
200	200	264	240	60	240	250	188	20	30	14	F-07	90	55	4	15	70	8	4.4
250	246	319	275	68	293	305	239	25	50	18	F-12	150	85	4	20	125	12	7.8
300	297	375	310	78	345	357	289	25	50	18	F-12	150	85	4	20	125	12	10.8

### K<sub>v</sub> (C<sub>v</sub>) VALUES

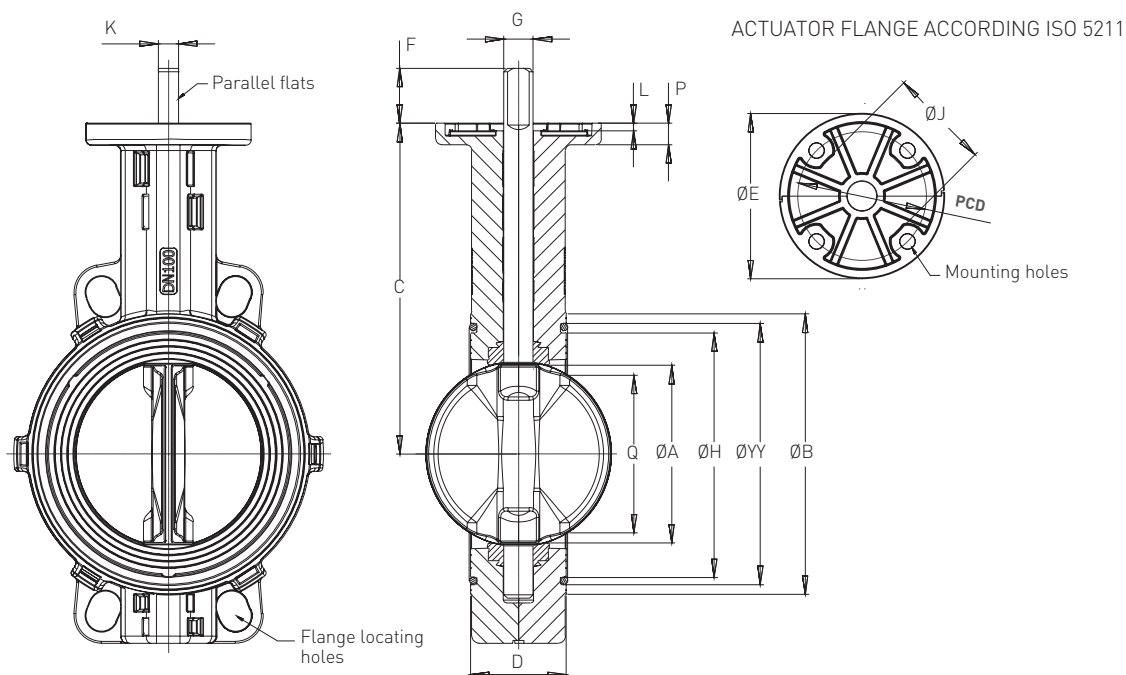
Disc opening	Size DN (NPS)									
	40 (1.5)	50 (2)	65 (2.5)	80 (3)	100 (4)	125 (5)	150 (6)	200 (8)	250 (10)	300 (12)
10°	-	-	-	-	-	-	-	-	19.5 [22.62]	47.3 [54.87]
20°	0.6 [0.70]	0.9 [1.04]	2.4 [2.78]	5.0 [5.80]	9.2 [10.67]	14.8 [17.17]	22.4 [25.98]	53.0 [61.48]	151.0 [175.00]	314.0 [364.00]
30°	3.8 [4.41]	5.9 [6.84]	11.1 [12.88]	20.4 [23.66]	37.6 [43.62]	66.8 [77.49]	108.0 [125.00]	204.0 [237.00]	300.0 [348.00]	369.0 [428.00]
40°	9.2 [10.67]	14.3 [16.59]	26.2 [30.39]	47.4 [54.98]	84.8 [98.37]	143.0 [166.00]	221.0 [256.00]	392.0 [455.00]	572.0 [664.00]	718.0 [833.00]
50°	18.1 [21.00]	28.3 [32.83]	49.7 [57.65]	87.9 [102.00]	154.0 [179.00]	254.0 [295.00]	381.0 [442.00]	657.0 [762.00]	956.0 [1109.00]	1212.0 [1406.00]
60°	33.5 [38.86]	51.6 [59.86]	87.4 [101.00]	151.0 [175.00]	260.0 [302.00]	420.0 [487.00]	621.0 [720.00]	1050.0 [1218.00]	1540.0 [1786.00]	1993.0 [2312.00]
70°	50.0 [58.00]	88.6 [103.00]	156.0 [181.00]	274.0 [318.00]	426.0 [490.00]	668.0 [768.00]	1027.0 [1181.00]	1731.0 [2008.00]	2628.0 [3048.00]	3624.0 [4204.00]
80°	53.0 [61.48]	101.0 [117.00]	210.0 [244.00]	420.0 [487.00]	710.0 [816.00]	1114.0 [1281.00]	1711.0 [1967.00]	2946.0 [3417.00]	4616.0 [5355.00]	6613.0 [7671.00]
90°	54.0 [62.64]	102.0 [118.00]	216.0 [251.00]	437.0 [507.00]	732.0 [841.00]	1148.0 [1320.00]	1764.0 [2028.00]	3199.0 [3711.00]	5948.0 [6900.00]	9872.0 [11452.00]

### FLANGE DRILLING COMPATIBILITY

Flange standard	Size DN (NPS)									
	40 (1.5)	50 (2)	65 (2.5)	80 (3)	100 (4)	125 (5)	150 (6)	200 (8)	250 (10)	300 (12)
PN 6/10/16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ASME 150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
JIS 10K	✓	✓	✓	✓	✓	✓	✓	✓	✓	X
JIS 5K	X	X	✓	X	X	✓	✓	X	X	X
AS 2129, Table E	✓	✓	X	✓	✓	✓	✓	✓	✓	✓

# KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES

## VALVE DATA - IMPERIAL DATA

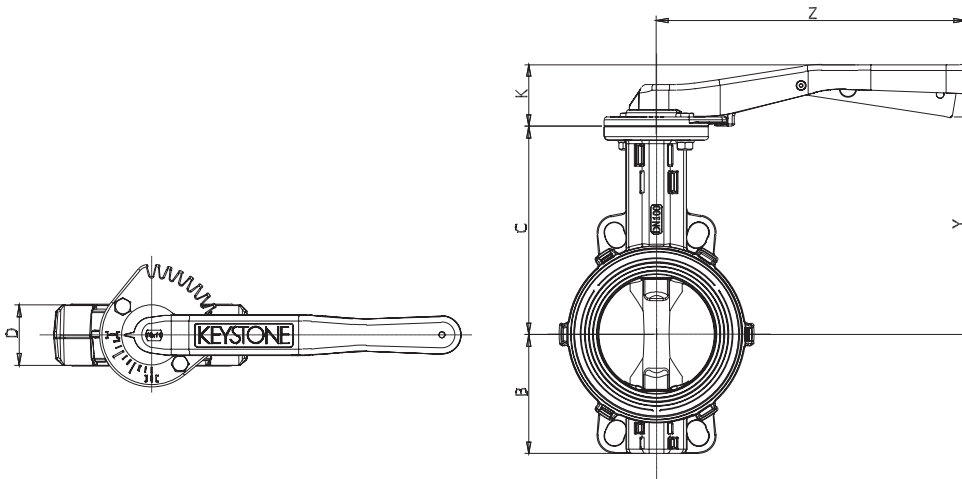


### VALVE DIMENSIONS (inches)

Size (NPS)	A	B	C	D	H	YY	Q	Parallel flats			Type	E	J	L	P	PCD	Hole	Mass (lbs)
								G <sub>H9</sub>	F	K <sub>0.05</sub>								
1.5	1.57	3.07	5.12	1.30	2.44	2.76	0.98	0.4724	0.98	0.315	F-05	2.56	1.38	0.16	0.39	1.97	0.24	1.3
2	2.05	3.70	5.31	1.69	3.07	3.39	1.22	0.4724	0.98	0.315	F-05	2.56	1.38	0.16	0.39	1.97	0.24	1.8
2.5	2.44	4.29	5.91	1.81	3.58	3.90	1.69	0.6299	1.18	0.4331	F-07	3.54	2.17	0.16	0.47	2.76	0.31	2.6
3	3.07	4.96	6.30	1.81	4.17	4.57	2.56	0.6299	1.18	0.4331	F-07	3.54	2.17	0.16	0.47	2.76	0.31	2.9
4	3.94	6.06	7.09	2.05	5.20	5.59	3.43	0.6299	1.18	0.4331	F-07	3.54	2.17	0.16	0.47	2.76	0.31	4.0
5	4.92	7.24	7.68	2.20	6.30	6.69	4.45	0.7874	1.18	0.5512	F-07	3.54	2.17	0.16	0.59	2.76	0.31	5.9
6	5.91	8.23	8.27	2.20	7.28	7.68	5.59	0.7874	1.18	0.5512	F-07	3.54	2.17	0.16	0.59	2.76	0.31	6.8
8	7.87	10.39	9.45	2.36	9.45	9.84	7.40	0.7874	1.18	0.5512	F-07	3.54	2.17	0.16	0.59	2.76	0.31	9.7
10	9.69	12.56	10.83	2.68	11.54	12.01	9.41	0.9843	1.97	0.7187	F-12	5.91	3.35	0.16	0.79	4.92	0.47	17.2
12	11.69	14.76	12.20	3.07	13.58	14.06	11.38	0.9843	1.97	0.7187	F-12	5.91	3.35	0.16	0.79	4.92	0.47	23.8

# KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES

## VALVE DATA AND TORQUES



### HANDLE DIMENSIONS F419 / VALVE DIMENSIONS

Size DN (NPS)	Type	B	C	D	K	Y	Z	Valve + handle in Mass kg (lbs)
40 (1.5)	F419	56 [2.20]	130 [5.12]	33 [1.30]	40 [1.57]	133 [5.24]	180 [7.09]	0.7 (1.5)
50 (2)	F419	63 [2.48]	135 [5.31]	43 [1.69]	40 [1.57]	138 [5.43]	180 [7.09]	0.9 (2.0)
65 (2.5)	F419	76 [2.99]	150 [5.91]	46 [1.81]	54 [2.13]	154 [6.06]	267 [10.51]	1.5 (3.3)
80 (3)	F419	88 [3.46]	160 [6.30]	46 [1.81]	54 [2.13]	164 [6.46]	267 [10.51]	1.6 (3.5)
100 (4)	F419	103 [4.02]	180 [7.09]	52 [2.05]	54 [2.13]	184 [7.24]	267 [10.51]	2.1 (4.6)
125 (5)	F419	120 [4.72]	195 [7.68]	56 [2.20]	54 [2.13]	199 [7.83]	267 [10.51]	3.0 (6.6)
150 (6)	F419	132 [5.20]	210 [8.27]	56 [2.20]	54 [2.13]	214 [8.43]	267 [10.51]	3.4 (7.5)

### NOTES

- The specified sizing torque is applicable for standard EPDM/NBR seat (used in trim 441/443).
- Application I:**  
Water, seawater, lubricating types of hydrocarbons. Temp.: 0°C - 80°C (0°F - 176°F); Valve opens at least once a month.  
**Application II:**  
All other liquid applications and lubricating gasses.  
**Application III:**  
Non lubricating and dry media.
- The charted maximum sizing operating torque is the sum of all friction and resistance for opening and closing of the disc against the indicated pressure differential.
- The effect of dynamic torque is not considered in tabulation.
- In sizing operators it is not necessary to include safety-factors.
- Torque values for potable water approved version of EPDM and FKM-B are based on the following factors:  
Application I: as listed  
Application II: multiplier 1.5  
Application III: multiplier 2
- For potable water approved version of EPDM used in CIP chlorinated caustic cleaner, use values of Application III with multiplier 2.

### SIZING TORQUES (Nm/lbf) FOR STANDARD EPDM/NBR <sup>(1)</sup>

Application ΔP bar (psi)	Size DN (NPS)									
	40 (1.5)	50 (2)	65 (2.5)	80 (3)	100 (4)	125 (5)	150 (6)	200 (8)	250 (10)	300 (12)
<b>I</b>										
3.5 (50)	8 (71)	10 (89)	15 (133)	21 (186)	30 (266)	46 (407)	65 (575)	119 (1053)	193 (1708)	276 (2443)
7 (100)	8 (71)	11 (97)	16 (142)	22 (195)	32 (283)	50 (443)	71 (628)	131 (1159)	216 (1912)	310 (2744)
10 (150)	9 (80)	11 (97)	17 (150)	24 (212)	35 (310)	56 (496)	79 (699)	150 (1328)	252 (2230)	361 (3195)
16 (232)	9 (79)	11 (97)	18 (159)	26 (320)	38 (336)	62 (549)	87 (770)			
<b>II</b>										
3.5 (50)	9 (80)	11 (97)	17 (150)	23 (204)	34 (301)	53 (469)	74 (655)	135 (1195)	219 (1938)	313 (2770)
7 (100)	9 (80)	12 (106)	18 (159)	24 (212)	36 (319)	57 (504)	80 (708)	148 (1310)	242 (2142)	347 (3071)
10 (150)	9 (80)	12 (106)	19 (168)	26 (230)	39 (345)	63 (558)	88 (779)	167 (1478)	278 (2460)	398 (3522)
16 (232)	10 (88)	13 (115)	20 (177)	28 (248)	42 (372)	69 (611)	96 (850)			
<b>III</b>										
3.5 (50)	12 (106)	15 (133)	23 (204)	32 (283)	48 (425)	74 (655)	105 (929)	190 (1682)	306 (2708)	439 (3885)
7 (100)	12 (106)	16 (142)	24 (212)	34 (301)	50 (443)	79 (699)	112 (991)	206 (1823)	336 (2974)	481 (4257)
10 (150)	12 (106)	16 (142)	26 (230)	36 (319)	54 (478)	86 (761)	122 (1080)	229 (2027)	380 (3363)	545 (4823)
16 (232)	13 (115)	17 (150)	28 (248)	38 (336)	58 (513)	93 (823)	132 (1168)			

1. See note 6 for potable water approved EPDM and FKM-B seat. See note 7 for CIP application.

### MAXIMUM ALLOWABLE SHAFT TORQUES Nm (lbf)

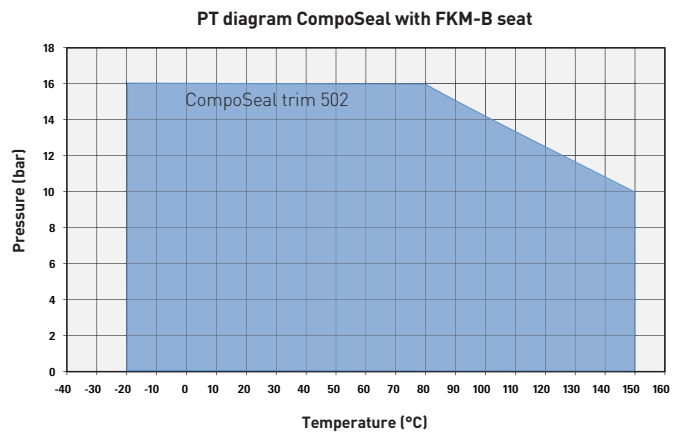
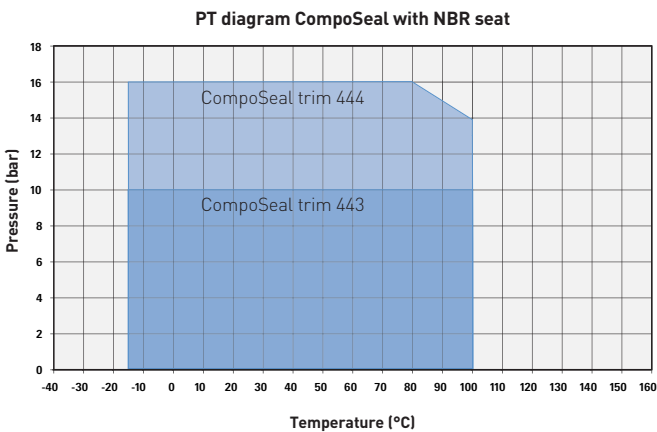
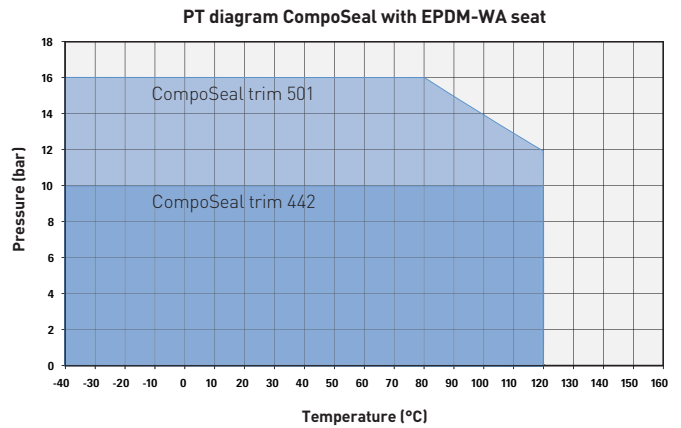
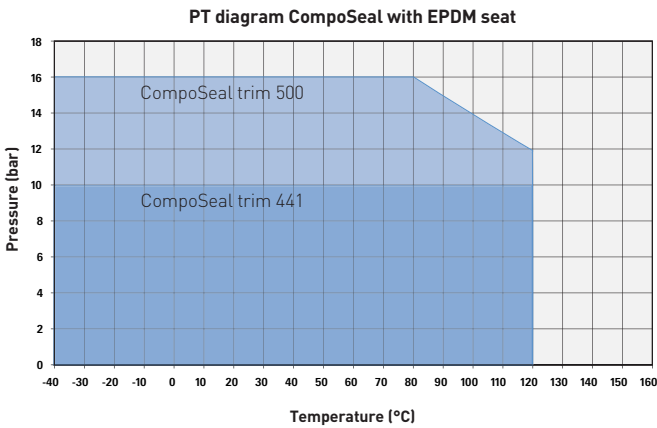
Valve size DN (NPS)	40 (1.5)	50 (2)	65 (2.5)	80 (3)	100 (4)	125 (5)	150 (6)	200 (8)	250 (10)	300 (12)
SS 1.4057	60	60	110	160	210	350	450	550	970	970
	(531.40)	(531.40)	(974.23)	(1417.06)	(1859.89)	(3099.81)	(3985.47)	(4871.13)	(8590.90)	(8590.90)

# KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES

## MATERIALS AND PRESSURE RATINGS - METRIC DATA

### VALVE MATERIAL SELECTION

Body	Disc	Shaft	Seat	Flange O-ring	Sizes	Trim	Remarks
Composite XP1600	Composite XP1620	Stainless steel 1.4057	EPDM	EPDM-WA	DN 40-300	441	NSF 61 and ACS approved
Composite XP1600	Composite XP1620	Stainless steel 1.4057	EPDM-WA	EPDM-WA	DN 40-300	442	KIWA and WRAS approved
Composite XP1600	Composite XP1620	Stainless steel 1.4057	NBR	NBR	DN 40-300	443	
Composite XP1620	Composite XP1620	Stainless steel 1.4057	EPDM	EPDM-WA	DN 40-150	500	NSF 61 approved
Composite XP1620	Composite XP1620	Stainless steel 1.4057	EPDM-WA	EPDM-WA	DN 40-150	501	KIWA and WRAS approved
Composite XP1620	Composite XP1620	Stainless steel 1.4057	NBR	NBR	DN 40-150	444	
Composite XP1620	Composite XP1620	Stainless steel 1.4057	FKM-B	FKM-B	DN 40-150	502	



### ITEM NUMBER CLARIFICATION

Type	Body style	Flange pattern / face to face	Operation/Connection	Variant
CSW = CompoSeal	W = Wafer	ML = Multidrilled PN 6/10/16/A150/JIS10K/AS2129-E	B = Bare shaft	00 = Standard
		MM = Multidrilled PN 6/10/16/A150/JIS10K	L = Lever operated	
		MN = Multidrilled PN 6/10/16/A150/AS2129-E		

### EXAMPLE SET-UP ITEM NUMBER

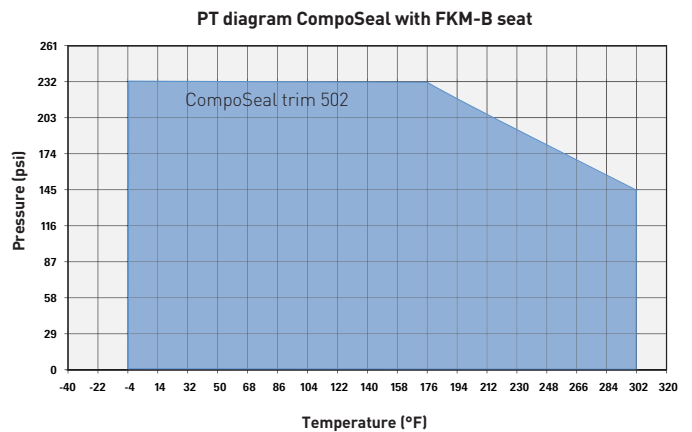
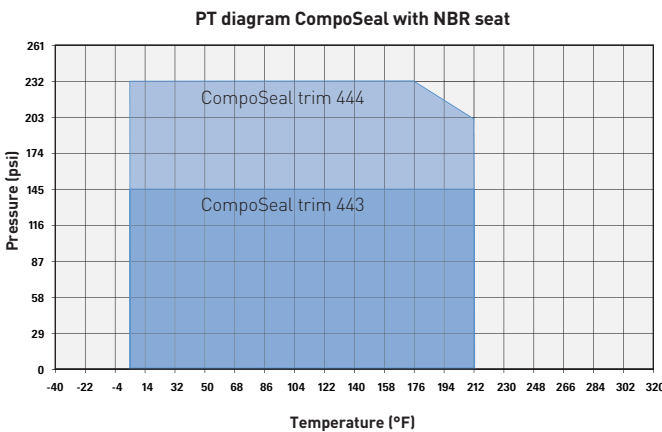
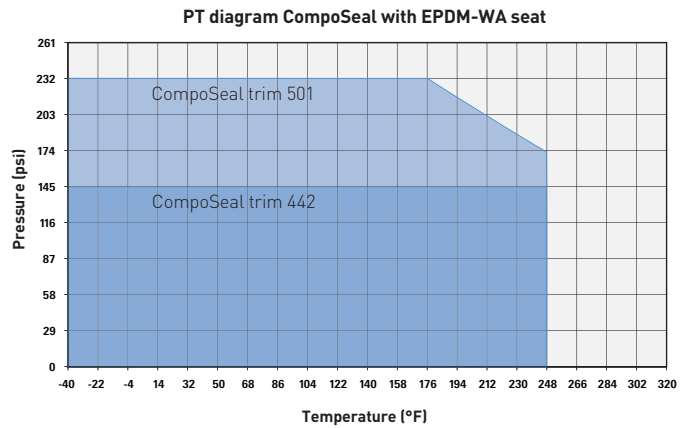
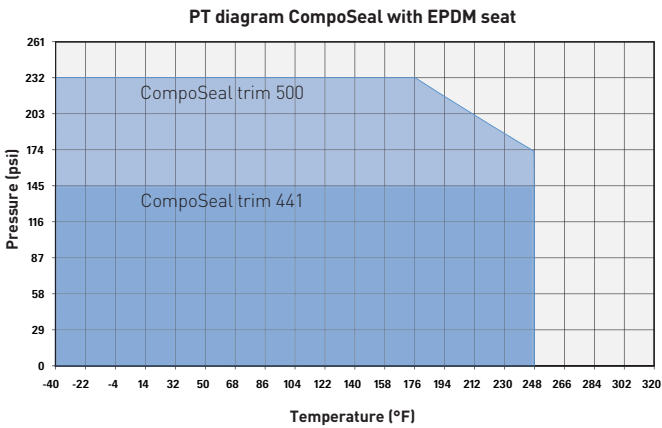
Type	Size DN	Trim	Body style	Flange pattern	Operation	Variant
CSW	050	441	W	ML	L	00

# KEYSTONE COMPOSEAL RESILIENT SEATED BUTTERFLY VALVES

## MATERIALS AND PRESSURE RATINGS - IMPERIAL DATA

### VALVE MATERIAL SELECTION

Body	Disc	Shaft	Seat	Flange O-ring	Sizes	Trim	Remarks
Composite XP1600	Composite XP1620	Stainless steel 1.4057	EPDM	EPDM-WA	NPS 1.5-12	441	NSF 61 and ACS approved
Composite XP1600	Composite XP1620	Stainless steel 1.4057	EPDM-WA	EPDM-WA	NPS 1.5-12	442	KIWA and WRAS approved
Composite XP1600	Composite XP1620	Stainless steel 1.4057	NBR	NBR	NPS 1.5-12	443	
Composite XP1620	Composite XP1620	Stainless steel 1.4057	EPDM	EPDM-WA	NPS 1.5-6	500	NSF 61 approved
Composite XP1620	Composite XP1620	Stainless steel 1.4057	EPDM-WA	EPDM-WA	NPS 1.5-6	501	KIWA and WRAS approved
Composite XP1620	Composite XP1620	Stainless steel 1.4057	NBR	NBR	NPS 1.5-6	444	
Composite XP1620	Composite XP1620	Stainless steel 1.4057	FKM-B	FKM-B	NPS 1.5-6	502	



### ITEM NUMBER CLARIFICATION

Type	Body style	Flange pattern / face to face	Operation/Connection	Variant
CSW = CompoSeal	W = Wafer	ML = Multidrilled PN 6/10/16/A150/JIS10K/AS2129-E	B = Bare shaft	00 = Standard
		MM = Multidrilled PN 6/10/16/A150/JIS10K	L = Lever operated	
		MN = Multidrilled PN 6/10/16/A150/AS2129-E		

### EXAMPLE SET-UP ITEM NUMBER

Type	Size NPS	Trim	Body style	Flange pattern	Operation	Variant
CSW	2	441	W	ML	L	00

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