



NeroValves GmbH

Industrial Valves: DIN · API · ASME

Nero High Performance Butterfly Valves

Nero High Performance Butterfly Valves

- Triple Offset Butterfly Valve
- Double Offset Butterfly Valve
- Resilient seated Butterfly Valve



Model

Triple Offset
High Performance (double offset)
Resilient Seated (Concentric)

Rating

ASME class 125
ASME class 150
ASME class 300
ASME class 600
PN 10
PN 16
PN 25
PN 40

End Connection

Wafer
Lug
Double Flange

Disc material

- 1 – A216 WCB + ENP
- 2 – A217 WC9 + ENP
- 3 – A351 CF8
- 4 – A351 CF8M
- 5 – A356
- 6 – B148
- 7 – CA15 410 SS

STEM material

304 SS
316 SS
410 SS

416 SS
630 SS
4 PHSS

Seat material

BUNA-N
EPDM
VITON
NEOPRENE

PTFE
RTFE
316SS
STELLITE

Operator

Lever
Gear Operator
Bare Stem

Subject to alternation

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Body material

Material	Specification (ASTM)	Material	Specification(ASTM)
Carbon Steel	A216, WCB	ALLOY 825	UNS N00825
Low Temp. Carbon	A352, LCB	ALLOY 625	A494, CW6MC
Low Temp. Carbon	A352, LCC	HASTOLLOY C276	A494, CW12MW
5% Cr Steel	A217, C5	MONEL 400	A494, M351
9% Cr Steel	A217, C12	Nickel AL- BZ	B148, C95800
Low Temp 13Cr 4n	A352,CA6NM	INCONEL 625	A494, CW6MC
410 Stainless steel	A217, CA15	Duplex SS Gr. 1	A351, CD4MCu
304 Stainless steel	A351, CF8	Duplex SS Gr.2	A890, CE8MN
316 Stainless steel	A351, CF8M	Duplex SS Gr.3	A890, CD6MN
316L Stainless steel	A351, CF3M	Duplex SS Gr.4	A890, CD3MN
317 Stainless steel	A352, CG8M	Duplex SS Gr.5	A890, CE3MN
ALLOY 20	A351, CN7M	254 SMO	351, CK3MCuN
Gray Iron	A126, class B	904L Stainless Steel	A351, CN2MCuN
Ductile Iron	A395,65-45-12	Titanium Gr. 2	B381, F2

Other material for Disc and Body on request

Manual Gear Operation

Nero Valves adopt a worm gear operation served as a standard.

This type of valve has advantages of large output and easy operation due to high gear ratio, so that it is used extensively for quarter turn valves.

The gear constructed by self-locking mechanism is suitable for triple offset valves, which require torque seating. Clockwise turning of the handwheel makes the valves closed and counter clockwise turning makes the valves opened.



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Industrial Valves: DIN - API - ASME

Nero High Performance Butterfly Valves

Electric Motor actuator operation

This valve is operated by an electric signal coming from the electric motor to open, close, or stop the valve in the process of operation.

The position limit switch or torque switch signals stop at full open or close.

The electrical motor actuator is applied mainly to large size or high pressure valves because of greater torque over pneumatic actuator.

This type has advantages of simple wiring and good response.



Pneumatic actuator operation

This type of the valves is operated by a signal of air pressure

There are two operating methods:

Single acting and double acting:

The single acting actuator is divided into full close and full open according to spring action orientation.

It is useful for control valve by virtue of its characteristics of safety and easy handling.

Furthermore, the construction is more responsive than electric motor or hydraulic actuator.

The double acting actuator is served as NERO standard with air regulator, solenoid valve, and position indicator types.



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Nero High Performance Butterfly Valves

Specification – Triple Offset Butterfly Metal Seat

Design Feature

- Designed in accordance with ASME B16.34 or other customer requirements
- Fire safe design

Standards

Option

Face-to-Face Dimensions

Wafer and LUG Type

API 609 Table 2./ MSS-SP-68 Table 1
 Class 150 & 300: 3” to 24”
 Class 600: 3” to 12”

ISO 5752 Table 5
 Class 150 & 300: 28” to 48”
 Class 600: 14” to 24”

Double Flange

ISO 5752 Table 4, BS 5155 table 6(short)
 Class 150 & 300: 3” to 24”
 ISO 5752 Table 4, BS 5155 Table 6(long)
 Class 600: 3” to 12”

ISO 5752 Table 4, BS 5155 Table 6(short)
 Class 150 & 300: 28” to 80”
 ISO 5752 Table 4, BS 5155 Table 6(long)
 Class 150 & 300: 3” to 80”
 Class 600: 14” to 24”
 ASME B16.10
 Class 150 & 300: 3” to 24”
 Class 600: 3” to 24”

Butt Welding

ISO 5752 Table 4, BS 5155 Table 6(short)
 Class 150 & 300: 28” to 80”
 Class 600: 14” to 24”

End Flange

ASME B16.5: Class 150, 300, 600
 JIS B2210:10K, 16K, 20K, 30K, 40K
 DIN, ISO PN10, PN16, PN25, PN40

ASME B16.47 Series A, class 150, 300
 MSS-SP-44: class 150, 300, 600
 BS 3293: class 150, class 300

Operating

Manual worm gear

Electric, Pneumatic & hydraulic
 Actuator lock lever

Mounting Flange

ISO 5211

Testing

API 598

MSS-SP-61, ANSI B16.104

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Design Principles – Triple Offset Butterfly Metal Seat

Triple offset Design Principles

Nero triple offset metal seat butterfly valves provide a bi-directional and bubble-tight shutoff, which is attributed to the geometry of triple offset seat.

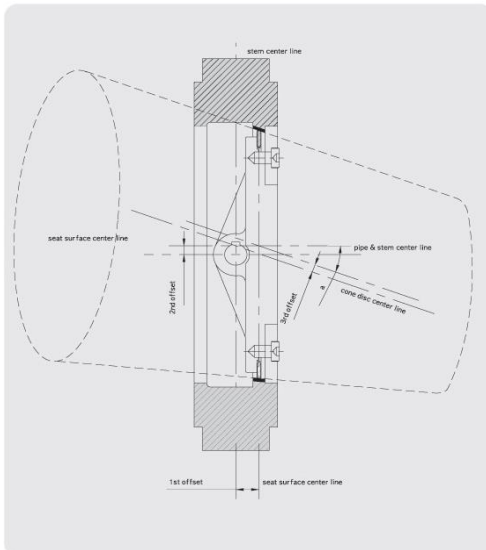
The valve stem is offset by seat (1st offset) and the valve seat surface centre line is off-set against the centre line of pipe (2nd offset) and the conical axis is offset by valve centre line (3rd offset: inclined cone)

The 3rd offset completely eliminates rubbing

The seat surfaces of body and seal ring in triple offset valve contact with the inclined “cone-in-cone” and his design requires excellent sealing and seat part durability by slight wedging effects.

In addition, the angle of contact between body and seal ring has a good sealing performance by low torque because the angle travels the initial torque from actuator to seat parts without any loss by jamming.

This valve is characteristic of concentric, offset and double offset construction with remarkable sealing performance and seat part durability, and moreover it hardly ever needs repair.



Characteristics and Merits

- Excellent durability of seat part and low operating torque by non- rubbing characteristics with triple offset construction
- Bi-directional zero leakage service by resilient metal sealing and torque seating
- Unrestricted selection of face to face dimensions for API, ASME (ANSI), BS,ISO, etc. and perfect interchange ability of Gate, Ball, Plug, high performance Butterfly and other valves.
- Low emission by quarter turns construction and good performance at automation by virtue of low operating torque and low cost.

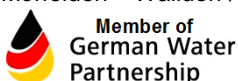
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Nero High Performance Butterfly Valves

Component Characteristics

Body

- The valve body shall be one piece cast or fabrication.
- The body can be supplied with different types of materials in Wafer, Lug or flanged and butt welding end connection to satisfy all installation requirements.

Body Seat

- The valve seat shall be integrated with the body.
- STELLITE or STEINLESS STEEL shall be applied on the seating surface of Valve body.
- The valve seat is designed for inclined cone to ensure NON-rubbing, NON-jamming, bi-directional shutoff and ZERO leakage.

Disc

- The valve disc shall be the same material as the valve body. It is supported by a laminated seal ring,
Which is kept in place by a seat retainer ring bolted to the disc and can be replaced easily.
- The spiral wound gasket shall be provided between laminated seal ring and disc.

Seal ring (Laminated)

- The seal ring shall be resilient stainless steel lamella alternated by graphite, aramid fiber and ceramic fiber layers.
- The surface contacting between seal ring and body seat is an inclined cone type and the inclined angle generates a slight wedging effect.
- With a seat retainer ring bolted to the disc, the seal ring is fixed to disc not too tightly to be replaced easily.

Stem

- The stem shall be stainless steel and one piece and two piece construction.
- The stem shall be fixed to the disc by pin or in combination of pin and key. It can be protected by internal thrust bush and bush bearing
- The thrust bush and bush bearing shall be provided to locate the valve disc a proper position.
- The retainer ring shall be installed to avoid blowing out the stem.

Packing

- The packing shall consist of two braided rings in the top and bottom of the valve and three die formed graphite in the middle.
- The lantern ring may be provided as requested by customer.

Actuators

- All valves shall be self-locking manual gear operation type which is served as standard.
- Electric, pneumatic or hydraulic actuator may be provided required by customer

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Nero High Performance Butterfly Valves

Standard Material List – Triple Offset Butterfly metal seat

STANDARD / Material according to ASTM						
No	Part Name	Material			QTY	Remark
1	Body	A216-WCB	A217-WC9	A351-CF8M		
2	Seat Surface	316 SS Faced	STELLITE No 6 faced	Integral	1	Note 2
3	Disc	A216-WCB + NEP	A217-WC9 + ENP	A351- CF8M	1	Note 1
4	Stem	A479- 410	A479- 410 A	A564- 630	1	
5	Retaining Ring	A479- 410	A479- 410 A	A479- 316	1	
6	Packing	Graphite	Graphite	Graphite	1	Set
7	Packing bland	A576-1020 + Cr	A479- 410 A	A479- 316	1	
8	Gland Flange	A105 or A576-1020 (S20C)	A105 or A576-1020 (S20C)	A351-CF8	2/4	
9	Gland Bolt	A193-B7	A193-B7	A193- B8	2/\$	
10	NUT	A184-2H	A184-2H	A194 -8	1	
11	Bush Bearing	A479- 410 + Nitr	A479- 410 + Nitr	A479-316+HCr. Plating	1	Note 1
12	Key	A479-410	A479-410	A564- 630	1	
13	Seal Ring	316 SS + Graphite	316 SS + Graphite	316 SS + Graphite	1	Laminated
14	Taper Pin	410 SS	410 SS	A 564-630	1	
15	Yoke	A576-1020 (S20C)	A576-1020 (S20C)	A576-1020+Zn Plating		Laminated
16	Yoke Bolt	A193-B7	A193-B7	A193- B8		
17	Yoke Nut	A184-2H	A184-2H	A194 -8		
18	Mounting Bolt	A194-B7 or EQ	A194-B7 or EQ	A194-B7 or EQ		
19	Spring washer	Steel	Steel	304 SS		
20	Key	A576-1045	A576	1045		
21	Gear Box	Ductile	Ductile	Ductile	1	
22	Cap	A576-1020 (S20C)	A240- 304	A240- 304	1	
23	Gasket (Cap)	304 SS+ Graphite	304 SS+ Graphite	304 SS+ Graphite	1	Spiral wound
24	Thrust Bush	A479 - 410	A479 - 410	A479- 316		
25	Seat Retainer	A576-1020 + ENP	A240- 304	A240- 316		
26	Retainer Bolt	A193-B8	A193-B8	A93-B8M		
27	Bush Bearing	A479-304 + Nitr	A479-304 + Nitr	A479-316+HCr. Plating	1	Note 1
28	Casket	304 SS+ Graphite	304 SS+ Graphite	304 SS+ Graphite	1	Spiral wound
29	Hand wheel	A53	A53	A53	1	
30	Cap Bolt	A193-B7	A193-B16	A193-B8	4/8	
31	Cap Nut	A194-2H	A194-4	A194-8	4/8	
32	Sealing Ring Nut	A479-304	A479-304	A479	1	
33	Spacer	A479-304	A479-304	A479	1	

Other Materials upon request

Note:

1. – Nitr: Hardened by NITRIDING; Hcr: Hard Cr. Plating; ENP: ELEKTROLESS Nickel Plating
2. – Class 150 & 300: 316 SS faced and integral, Class 600 and over STELLITE No. 6 Faced
3. – Recommended spare parts: Part No. 6, 13, 23 and 28

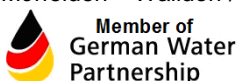
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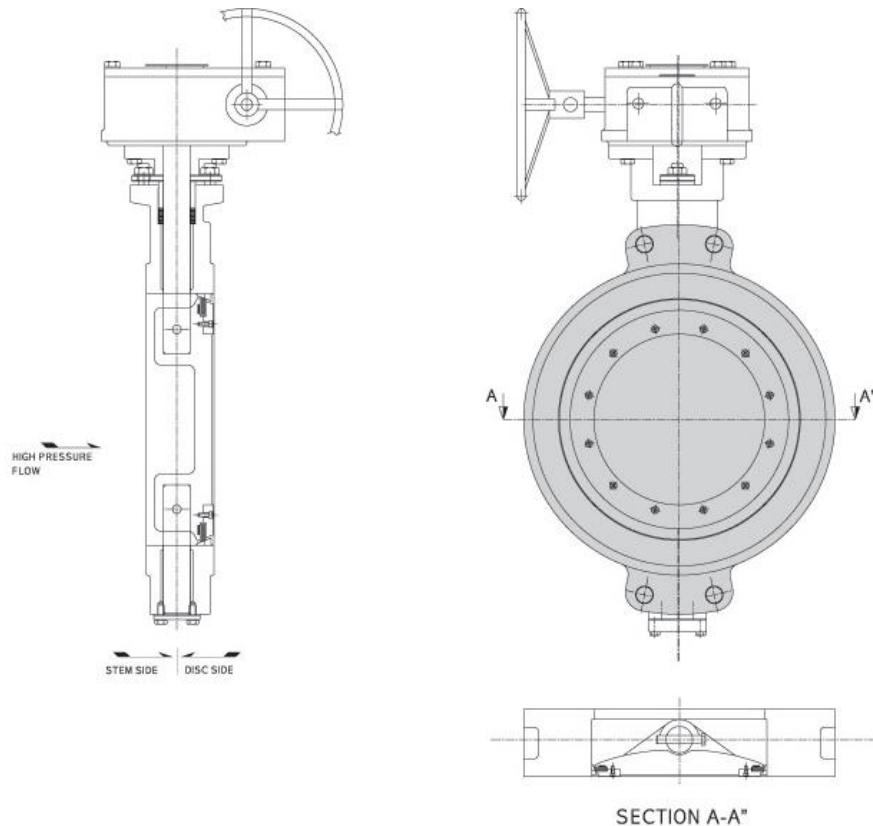
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OPTIONAL						
Material according to ASTM						
No	Part Name	Material			QTY	Remark
1	Body	A216-WCB	A217-WC9	A351-CF8M		
2	Seat Surface	STELLITE No 6 faced	STELLITE No 6 faced	STELLITE No 6 faced	1	
13	Seal Ring	Duplex SS+ Graphite	Duplex SS+ Graphite	Duplex SS+ Graphite	1	Laminated
		316 SS + ARAMID	316 SS + ARAMID	316 SS + ARAMID		
34	Retaining Ring	316 SS+ CRAMIC	316 SS+ CRAMIC	316 SS+ CRAMIC	1	Solid Metal ring
		A564-630 Or 316 SS + Nitr	A564-630 Or 316 SS + Nitr	A564-630 Or 316 SS + Nitr		
35	Plug	A105	410 SS	316 SS	1	
36	Grease Fitting	Carbon Steel+ Cr. Plating	316 SS	316 SS	1	
		A105	410 SS	316 SS		

Other Materials upon request

Sectional Drawing – Triple offset butterfly Metal Seat



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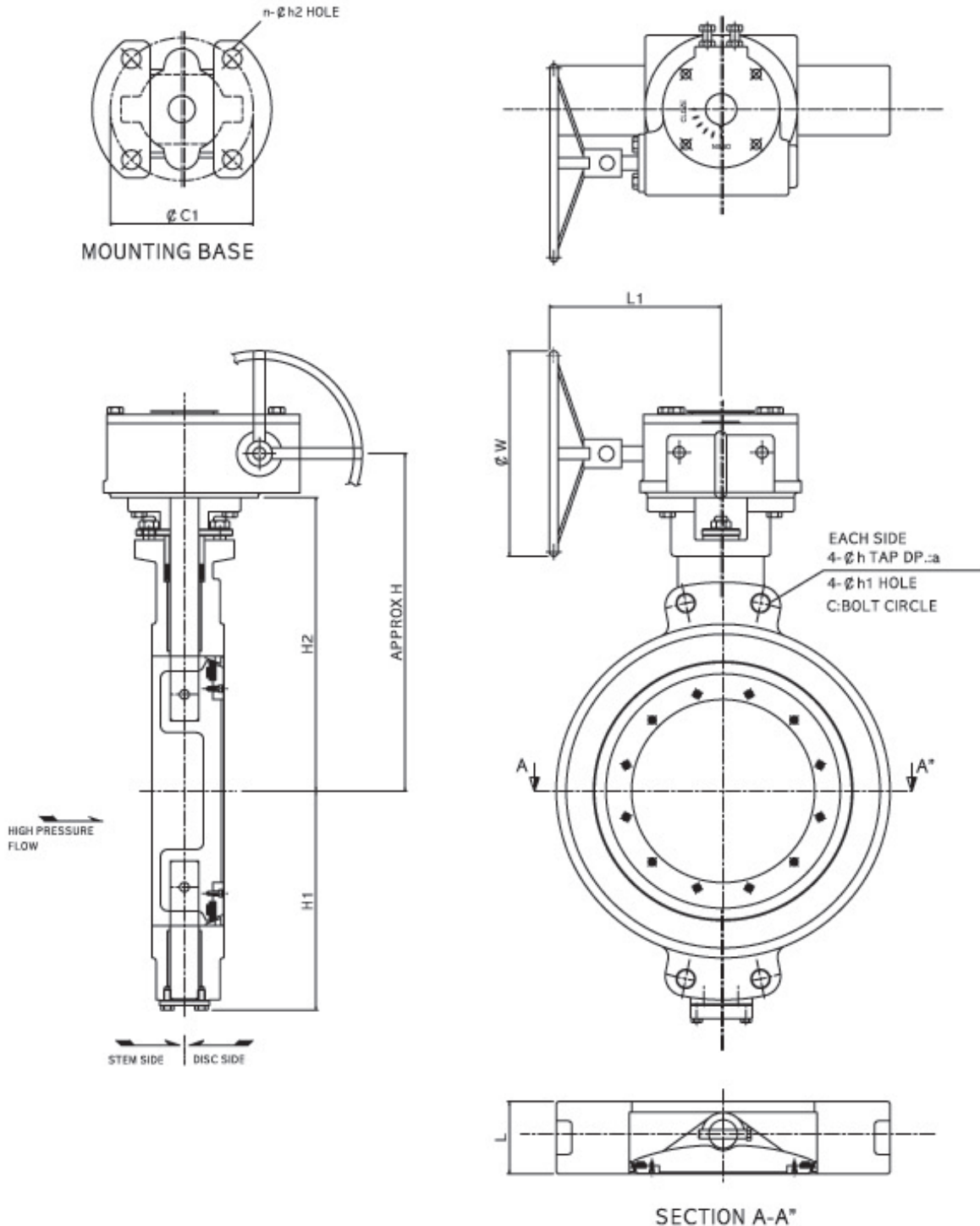
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Sectional Drawing

Triple Offset Butterfly Valve: Wafer Type- Outdrawing



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**Nero High Performance Butterfly Valves****Triple Offset butterfly Valve: Wafer Type****Dimensions**

TOB VALVE : WAFER TYPE – DIMENSIONS																UNIT: mm
CLASS 150																
SIZE		FLANGE DIMENSION										MOUNTING BASE				Weight
Inch	mm	L	C	h	a	h1	H	H1	H2	W	L1	TYPE	C1	n	h2	(kgf)
3	80	48	152.4	-	-	19.1	282	142	258	200	165	F07	70	4	9	21
4	100	54	190.5	-	-	19.1	294	162	270	200	165	F07	70	4	9	27
5	125	57	215.9	-	-	22.2	319	170	295	200	165	F07	70	4	9	32
6	150	57	241.3	-	-	22.2	340	179	316	200	165	F07	70	4	9	35
8	200	64	298.4	-	-	22.2	384	208	344	300	270	F10	102	4	11	53
10	250	71	361.9	-	-	25.4	434	241	394	300	270	F10	102	4	11	74
12	300	81	431.8	-	-	25.4	520	267	470	400	335	F14	140	4	18	95
14	350	92	476.3	-	-	28.6	544	316	494	400	335	F14	140	4	18	131
16	400	102	539.7	-	-	28.6	643	349	578	500	375	F16	165	4	22	165
18	450	114	577.8	-	-	31.8	660	381	595	500	375	F16	165	4	22	230
20	500	127	635.0	1-1/8-8	28.6	-	695	412	630	500	375	F16	165	4	22	280
24	600	154	749.3	1-1/4-8	31.8	-	813	473	743	600	485	F25	254	8	18	450
CLASS 300																
SIZE		FLANGE DIMENSION										MOUNTING BASE				Weight
Inch	mm	L	C	h	a	h1	H	H1	H2	W	L1	TYPE	C1	n	h2	(kgf)
3	80	48	168.2	-	-	22.2	282	142	258	200	165	F07	70	4	9	21
4	100	54	200.0	-	-	22.2	294	162	270	200	165	F07	70	4	9	27
5	125	59	234.9	-	-	22.2	319	170	295	300	270	F10	102	4	11	38
6	150	59	269.8	-	-	22.2	375	199	336	300	270	F10	102	4	11	45
8	200	73	330.2	-	-	25.4	450	227	400	400	335	F14	140	4	18	72
10	250	83	387.3	1-8	25.4		499	265	449	400	335	F14	140	4	18	135
12	300	92	450.8	1-1/8-8	28.6		562	302	497	500	375	F16	165	4	22	148
14	350	117	514.3	1-1/8-8	28.6		616	328	551	500	375	F16	165	4	22	208
16	400	133	571.5	1-1/4-8	31.8		676	367	606	600	485	F25	254	8	18	298
18	450	149	628.6	1-1/4-8	31.8		711	402	641	600	485	F25	254	8	18	382
20	500	159	685.8	1-1/4-8	31.8		798	432	721	700	520	F30	298	8	22	450
24	600	181	812.8	1-1/2-8	38.1		914	530	837	700	515	F30	298	8	22	680
CLASS 600																
SIZE		FLANGE DIMENSION										MOUNTING BASE				Weight
Inch	mm	L	C	h	a	h1	H	H1	H2	W	L1	TYPE	C1	n	h2	(kgf)
3	80	54	168.2	-	-	22.2	289	148	265	200	165	F07	70	4	9	29
4	100	64	215.9	-	-	25.4	370	180	330	300	270	F10	102	4	11	38
5	125	78	266.7	-	-	28.6	405	195	355	400	335	F14	140	4	18	55
6	150	78	292.1	1-8	25.4		420	225	370	400	335	F14	140	4	18	75
8	200	102	349.2	1-1/8-8	28.6		490	255	425	500	375	F16	165	4	22	136
10	250	117	431.8	1-1/4-8	31.8		545	310	480	500	375	F16	165	4	22	200
12	300	140	488.9	1-1/4-8	31.8		630	330	560	600	485	F25	254	8	18	295

Other dimensions and pressure rating upon request

Note:

1. – Valve design: acc to ASME B16.34
2. – Face to Face dimension: acc to API 609 (Wafer Type)
3. – End Flange Dimension: acc to ASME B16.5
4. – NOT specified class and Size, Please contact sales department

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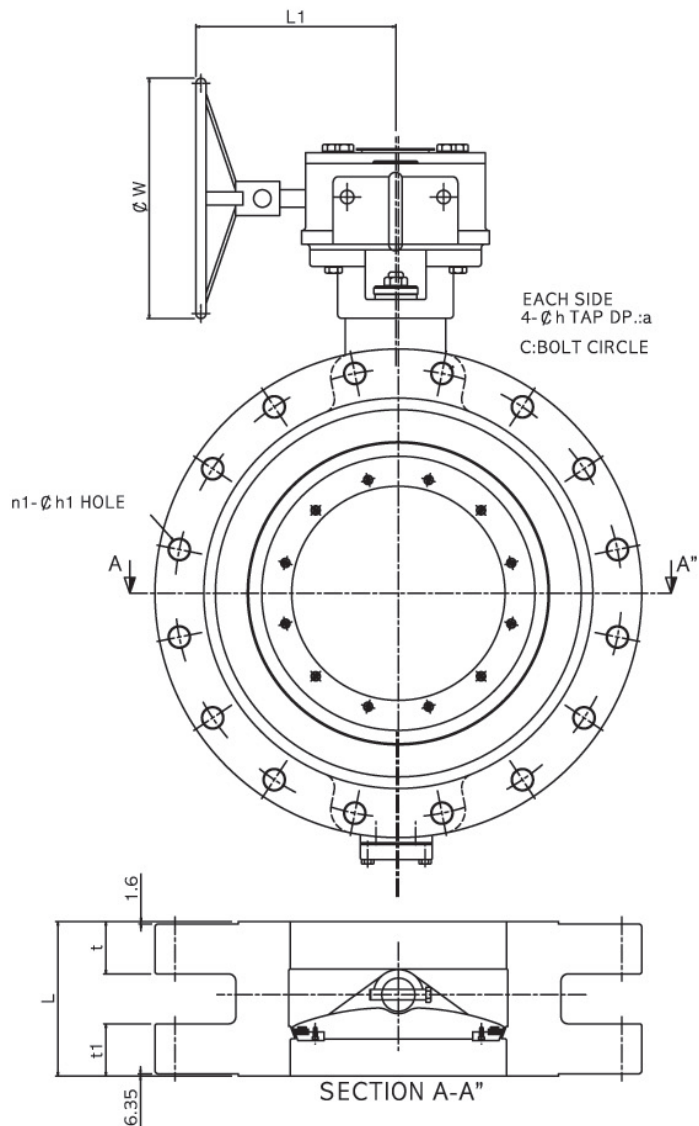
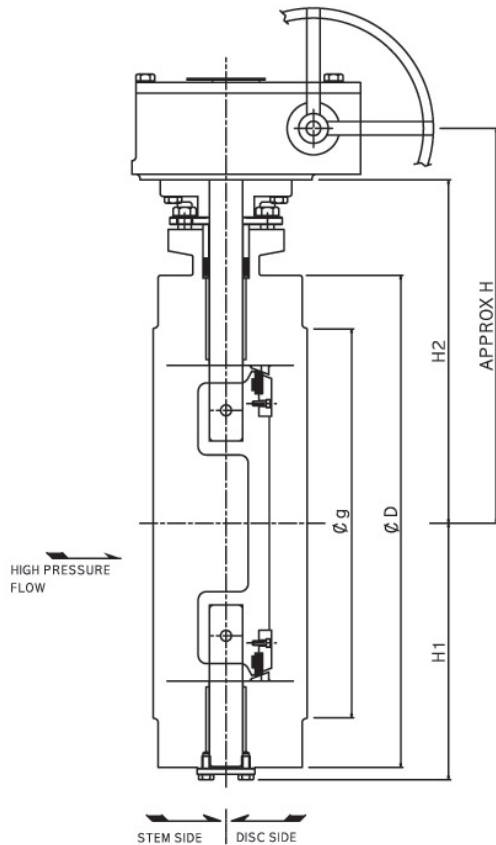
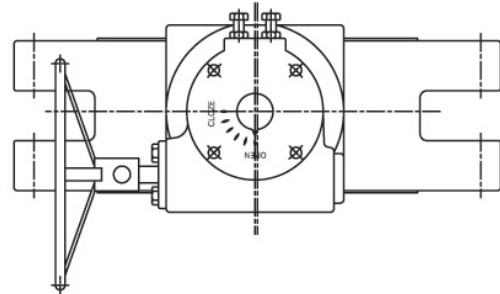
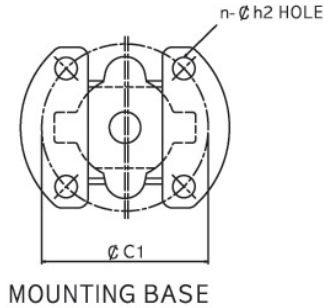
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Industrial Valves: DIN · API · ASME

Nero High Performance Butterfly Valves

Triple Offset butterfly double flange (short) Type

Triple offset butterfly double flange (short) Type – Outdrawing



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**Nero High Performance Butterfly Valves****Triple Offset Butterfly double flange (Short) Type****Dimensions**

CLASS 150																				
SIZE		FLANGE DIMENSION										MOUNTING BASE				Weight				
Inch	mm	L	D	g	c	t	h	a	n1	h1	H	H1	H2	W	L1	TYPE	C1	n	h2	(kgf)
3	80	114	191	127.0	152.4	19.1	5/8-11	15.8	4	19.1	282	142	258	200	165	F07	70	4	9	27
4	100	127	229	157.2	190.5	24.0	5/8-11	15.8	8	19.1	294	162	270	200	165	F07	70	4	9	35
5	125	140	254	185.7	215.9	24.0	3/4-10	19.1	8	22.2	319	170	295	200	165	F07	70	4	9	41
6	150	140	279	215.9	241.3	25.4	3/4-10	19.1	8	22.2	340	179	316	200	165	F07	70	4	9	45
8	200	152	343	269.7	298.4	28.5	3/4-10	19.1	8	22.2	384	208	344	300	270	F10	102	4	11	68
10	250	165	406	323.9	361.9	30.3	7/8-9	22.2	12	25.4	434	241	394	300	270	F10	102	4	11	97
12	300	178	483	381.0	431.8	31.8	7/8-9	22.2	12	25.4	520	267	470	400	335	F14	140	4	18	133
14	350	190	533	412.8	476.3	35.1	1-8	25.4	12	28.6	544	316	494	400	335	F14	140	4	18	188
16	400	216	597	469.9	539.7	36.6	1-8	25.4	16	28.6	643	349	578	500	375	F16	165	4	22	238
18	450	222	635	533.4	577.8	39.7	1-1/8-8	28.6	16	31.8	660	381	595	500	375	F16	165	4	22	302
20	500	229	699	584.2	635.0	43.0	1-1/8-8	28.6	20	31.8	695	412	630	500	375	F16	165	4	22	380
24	600	267	813	692.2	749.3	47.8	1-1/4-8	31.8	20	35.1	813	473	743	600	485	F25	254	8	18	599

CLASS 300																				
SIZE		FLANGE DIMENSION										MOUNTING BASE				Weight				
Inch	mm	L	D	g	c	t	h	a	n1	h1	H	H1	H2	W	L1	TYPE	C1	n	h2	(kgf)
3	80	114	210	127.0	168.2	28.5	3/4-10	19.1	8	22.2	282	142	258	200	165	F07	70	4	9	29
4	100	127	254	157.2	200.0	31.8	3/4-10	19.1	8	22.2	294	162	270	200	165	F07	70	4	9	39
5	125	140	279	185.7	234.9	35.0	3/4-10	19.1	8	22.2	319	170	295	300	270	F10	102	4	11	52
6	150	140	318	215.9	269.8	36.6	3/4-10	19.1	12	22.2	375	199	336	300	270	F10	102	4	11	63
8	200	152	381	269.7	330.2	41.2	7/8-9	22.2	12	25.4	450	227	400	400	335	F14	140	4	18	101
10	250	165	445	323.9	387.3	47.8	1-8	25.4	16	28.6	499	265	449	400	335	F14	140	4	18	176
12	300	178	521	381.0	450.8	50.8	1-1/8-8	28.6	16	31.8	562	302	497	500	375	F16	165	4	22	210
14	350	190	584	412.8	514.3	53.9	1-1/8-8	28.6	20	31.8	616	328	551	500	375	F16	165	4	22	315
16	400	216	648	469.9	571.5	57.2	1-1/4-8	31.8	20	35.1	676	367	606	600	485	F25	254	8	18	440
18	450	222	711	533.4	628.6	60.5	1-1/4-8	31.8	24	35.1	711	402	641	600	485	F25	254	8	18	558
20	500	229	775	584.2	685.8	63.5	1-1/4-8	31.8	24	35.1	798	432	721	700	520	F30	298	8	22	670
24	600	267	814	692.2	812.8	69.9	1-1/2-8	38.1	24	41.2	914	530	837	700	515	F30	298	8	22	1025

CLASS 600																				
SIZE		FLANGE DIMENSION										MOUNTING BASE				Weight				
Inch	mm	L	D	g	c	t	h	a	n1	h1	H	H1	H2	W	L1	TYPE	C1	n	h2	(kgf)
3	80	180	210	127.0	168.2	31.8	3/4-10	19.1	8	22.2	289	148	265	200	165	F07	70	4	9	37
4	100	190	273	157.2	215.9	38.1	7/8-9	22.2	8	25.4	370	180	330	300	270	F10	102	4	11	55
5	125	200	330	185.7	266.7	44.5	1-8	25.4	12	28.6	405	195	335	400	335	F14	140	4	18	86
6	150	210	356	215.9	292.1	47.8	1-8	25.4	12	28.6	420	225	370	400	335	F14	140	4	18	109
8	200	230	419	269.7	349.2	55.7	1-1/8-8	28.6	12	31.8	490	255	425	500	375	F16	165	4	22	192
10	250	250	508	323.9	431.8	63.5	1-1/4-8	31.8	16	35.1	545	310	480	500	375	F16	165	4	22	296
12	300	270	559	381.0	488.9	66.6	1-1/4-8	31.8	20	35.1	630	330	560	600	485	F25	254	8	18	390

Other dimensions and pressure rating upon request

Note:

1. – Valve design: acc to ASME B16.34
2. – Face to Face dimension: acc to ISO 5752 (Short Type)
3. – End Flange Dimension: acc to ASME B16.5
4. – NOT specified class and Size, Please contact sales department

Subject to alternation

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Triple Offset Butterfly Technical Data

Pressure/ Temperature Rating (Ref. ASME B16.34)

TEMPERATURE (°C)	MAXIMUM WORKING PRESSURE, kgf/cxA								
	CLASS 150			CLASS 300			CLASS 600		
	WCB	CF8M	WC9	WCB	CF8M	WC9	WCB	CF8M	WC9
-29 to 38	20.0	19.3	20.4	52.0	50.6	52.7	104.1	101.2	105.5
93	18.3	16.9	18.3	47.5	43.6	50.3	94.9	87.2	100.5
149	16.2	15.1	16.2	46.1	39.4	47.5	92.5	78.8	95.3
204	14.1	13.7	14.1	44.7	36.2	45.7	89.3	72.4	91.1
260	12.0	12.0	12.0	42.2	33.8	45.0	84.4	67.1	90.0
316	9.8	9.8	9.8	38.7	31.6	42.5	75.6	62.6	82.6
343	8.8	8.8	8.8	37.6	31.3	41.5	77.0	63.6	82.6
371	7.7	7.7	7.7	37.6	32.3	40.1	74.9	60.8	79.8
399	6.7	6.7	6.7	35.5	29.9	35.9	71.0	59.4	74.9
427	5.6	5.6	5.6	28.8	29.2	35.9	58.0	58.4	71.4
454	4.6	4.6	4.6	19.0	28.5	34.1	37.6	57.0	68.6
482	3.5	3.5	3.5	12.0	27.8	31.6	24.3	55.5	63.3
510	2.5	2.5	2.5	7.4	27.1	26.7	14.4	54.5	53.1
538	1.4	1.4	1.4	3.5	25.7	19.1	7.4	51.0	37.6
566		1.4(1)	1.4(1)		25.3	14.1		50.6	28.1
593		1.4(1)	1.4(1)		22.9	8.1		45.4	15.8
624		1.4(1)	1.4(1)		19.3	7.4		38.7	14.4
649		1.4(1)	1.4(1)		14.4	3.9		28.8	10.0

Note:

(1) – For weld valve only, the temperature rating of flanged end terminates t 538°C.....

Flow Data

Valve flow coefficient Cv defined as the flow of water at 60 °F in gallons per minute (GPM) at a pressure of one pound per square inch (1 psi) across the valve

$$Q = C_v \sqrt{(\Delta P (62.4/\rho))}$$

WHERE

Q = Flow rate (GPM)

Cv = Flow coefficient

ΔP = Pressure drop (psi)

ρ = Density of fluid (ρ = 62.4, water at 60°F)

THEREFORE

$$Q = C_v \sqrt{\Delta P}$$

FLOW COEFFICIENT VALUE (Cv)

Class	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
150#	195	345	500	827	1523	2698	4032	5674	7880	10594	13292	19604
300#	195	345	500	786	1447	2563	3830	5390	7486	10064	12627	18624
600#	195	345	475	746	1374	2435	3640					

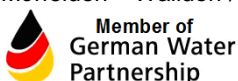
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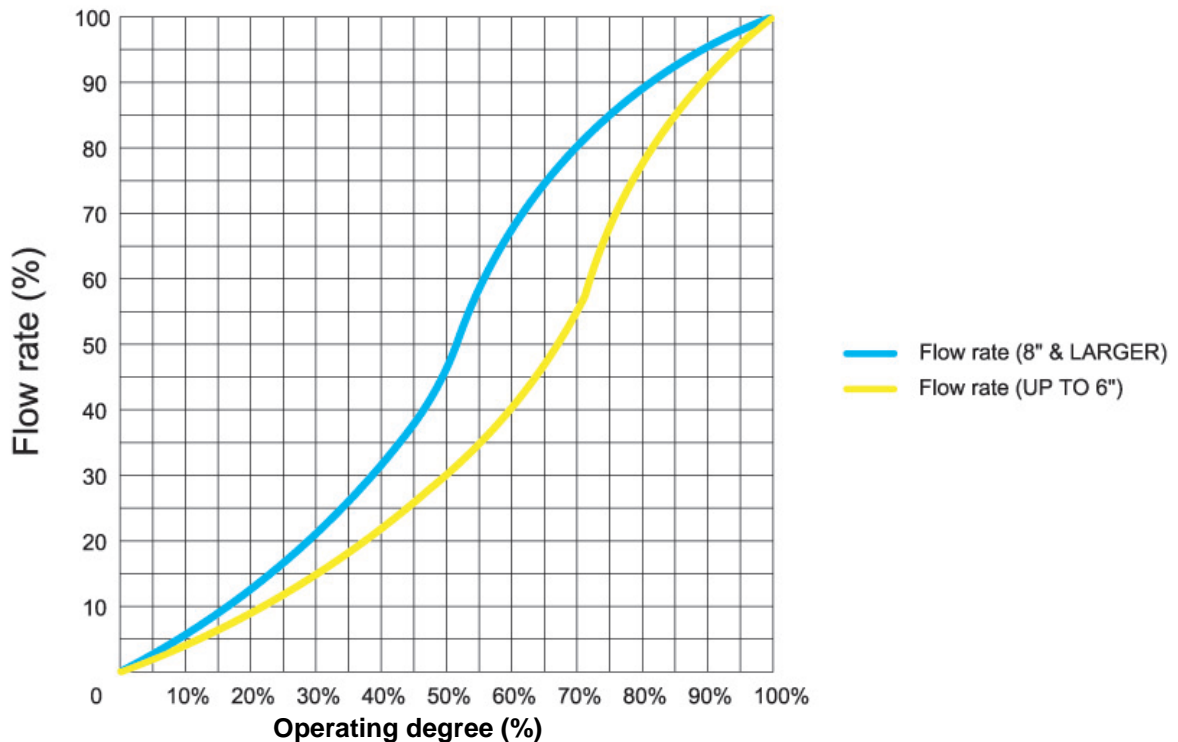


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Triple Offset Butterfly Technical Data

Flow Characteristic Curve



Torque Data

Max ΔP (kdf/cm ²)	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
10.5 (150PSIG)	2.8	4.9	6.8	11.0	19.3	29.8	51.2	61.7	86.5	143.7	181.8	272.5
20.0 (285PSIG)	5.4	9.3	13.0	20.8	36.5	56.4	96.8	116.5	163.1	271.0	342.1	510.7
28.1 (400PSIG)	7.6	13.0	18.2	29.1	52.3	81.5	134.2	169.3	236.8	386.0	495.1	735.1
42.2 (600PSIG)	11.3	19.3	27.3	43.7	78.4	122.1	201.0	253.6	354.5	578.0	741.0	1098.9
52.0 (740PSIG)	14.0	24.1	33.6	53.9	96.7	150.5	247.8	312.6	436.8	712.3	913.1	1353.5
104.1 (1480PSIG)	36.4	66.2	90.1	14.9	286.6	449.4	642.5					

Application

- Power plants
- Oil Refineries and Chemical Plants
- Pulp and Paper, Steel Mills
- Offshore Plants
- Ship Building

Installation Cautions

- The valves is bi-directional and can be mounted in any position, however, it is recommended that The valve is horizontal to the stem and inclined cone edge of disc traces toward the downstream
- If you want to use at a temperature below -48°... or above 426°... the extension design shall be applied. In such cases, please contact the seals-department.

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Nero High Performance Butterfly Valves

Specification – High Performance (double Offset Butterfly)

Design Feature

- Designed in accordance with ASME B16.34 or other customer requirements
- Fire safe design

Double Eccentric Type High Performance

Face-to-Face Dimensions Wafer and LUG Type

API 609 Table 2./ MSS-SP/ ISO 5752
Class 150 2" to 48"
Class 300 2" to 48"
Class 600: 3" to 24"

ISO 5752 Table 5
Class 150 2" to 48"

Double Flange

ISO 5752; BS 5155 table 6(short)
Class 150 2" to 48"
Class 300 2" to 48"
Class 600: 3" to 24"

ISO 5752, BS 5155
Class 150 2" to 48"

End Flange

ASME B16.5: Class 150, 300, 600
JIS B2210:10K, 16K, 20K,
DIN, ISO PN10, PN16, PN25, PN40

ASME B16.47 A/B, class 150, 300, 600
API 605, MSS-SP-44: class 150, 300, 600
BS 3293: class 150, 300

Operating

Manual worm gear
Lever, Handwheel

Electric, Pneumatic & hydraulic
Actuator lock lever

Mounting Flange

ISO 5211

MSS-SP-102

Testing

API 598

MSS-SP-61, ANSI B16.104

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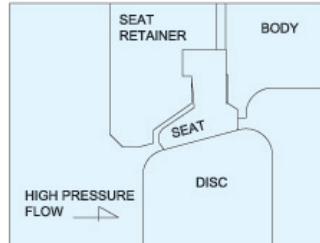
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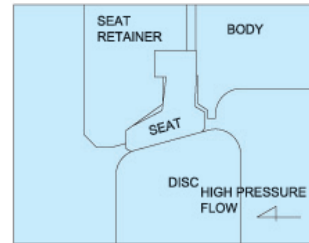


Seat Design Principles – High Performance (Double Offset)

Standard Design



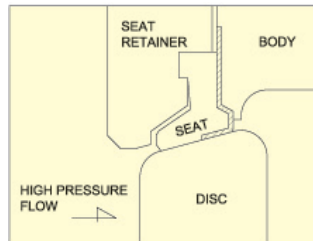
Forward Flow



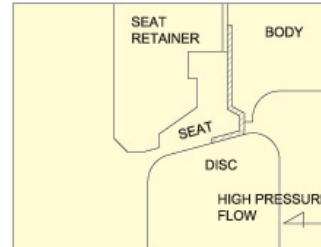
Reverse Flow

- Bi-directional flow and shut-off are easily accommodated.
- As pressure increases, seal becomes tighter

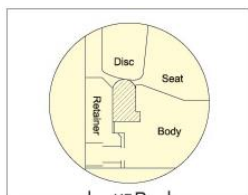
Fire Safety Design



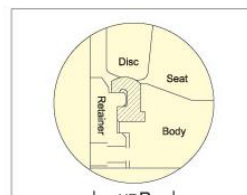
Before Fire Test



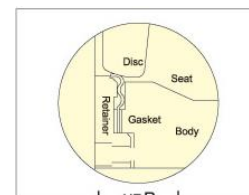
After Fire Test



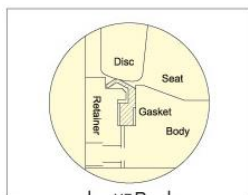
HF-R
EPDM / NBR / VITON
Rubber Seat



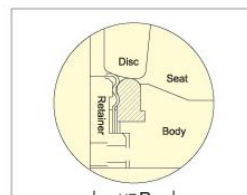
HF-R
PTFE / RTFE
Teflon Seat



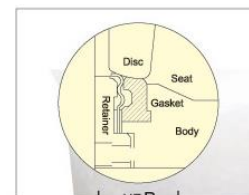
HF-R
INCONEL 625 / St. steel 316
Flat Metal Seat



HF-R
SF.St. steel 316 / MONEL
Solid Metal Seat



HF-R
Rubber / St. steel 316
Fire Safe-Rubber+Metal



HF-R
Teflon / St. steel 316
Fire Safe-Teflon+Metal

Seat Material and Working Temperature

Standard Material	Max. Working Temperature °C (°F)
PTFE	200(392)
RTFE	250(482)

Seat Leakage: Leakage soft-seated version (PTFE, RTFE) is zero

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**Nero High Performance Butterfly Valves****Standard Material List – High Performance (Double Offset Butterfly)****Standard Material List**

STANDARD						
Material according to ASTM						
No	Part Name	Material			QTY	Remark
1	Body	A216-WCB	A351 CF8	A351-CF8M		
2	Disc	CF8	A351 CF8	A351- CF8M	1	
3	Seat	VITON, EPDM, Buna- N, PTFE, RTFE, Metal			1	
4	Seat Retainer	A216-WCB	A351 CF8	A351-CF8M	1	
5	Bolt	A193 B7	A193 B8	A193 B8M	8	
6	Stem	A276 T304	A276 T304	A276 T316	1	
7	Lock Pin	A276 T304	A276 T304	A276 T316	1	
8	Bush	Oil less B/R			1	
9	Bush	Oil less B/R			1	
10	Gasket	TEFLON			1	
11	End Cover	A216-WCB	A351 CF8	A351-CF8M	1	
12	Bolt	A193 B7	A193 B8	A193 B8M	1	
13	Packing	TEFLON			1	
14	Bolt	A193 B7	A193 B8	A193 B8M	1 SET	
15	PAC. B / N	Bolt	A193 B7	A193 B8	2	
16	PAC. Gland	A216-WCB	A351 CF8	A351-CF8M	2	
17	Gland Ring	A276 T304	A276 T304	A276 T316	1	

Other Material upon request

Note

– RTFE: Reinforced PTFE

Features:

- Double tight shut – Off
- Light weight, compact size and easy installation
- General application valve
- Easy replaceable seat

Application:

- Power Plant
- Hydrocarbon processing

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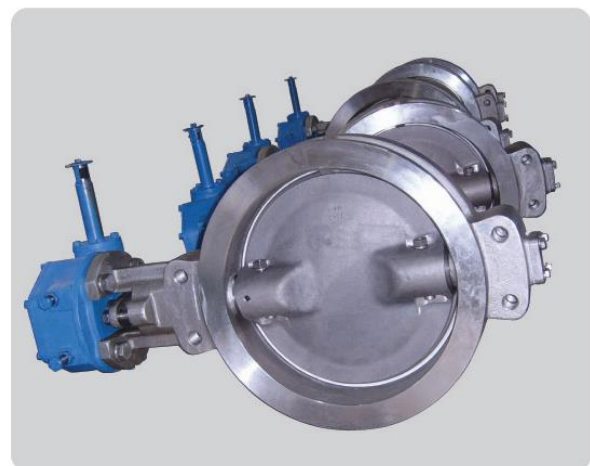
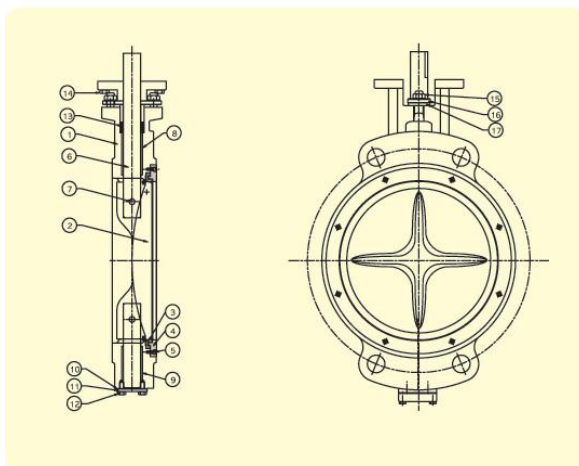
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Standard Specifications

Model Designation	HF-R	HF-T	HF-FM	HF-SM	HF-RF	HF-TF
Seat Ring	Rubber	Teflon	Flat Metal	Solid Metal	Rubber + Metal	Teflon + Metal
Size Range	DN 50 to DN 1200		DN 50 to DN 1200		DN 50 to DN 1200	
Pressure Rating	ANSI Class 150 & 300		ANSI Class 150 & 300		ANSI Class 150 & 300	
Body connection	Wafer / Lug/ Flanged/ Butt weld End					
Applicable flange	ANSI Class 150& 300 – JIS 10K, 20K – ISO – BS – DIN PN 10, PN 16, PN 25, PN 40					
Geometry	Double offset giving low unseating and seating torque					
Safety Feature	Anti Blow out device to API 609					
Face to Face	Lug and Wafer type: API std. 609 category B – ISO 5752 (25 Series)					
Design Base	API std. 609 – BS 5155 – ANSI B16.34 – ASME SEC VIII					
Seat Leak (Water)	NONE	NONE	Tight Shut V	Tight Shut V	NONE	NONE
Working Temperature	-10 to + 120°C	-50 to + 120°C	-80 to + 300°C	-80 to + 300°C	-10 to +120°C	-10 to +120°C
Standard Material						
Body/ Disc	STD; ASTM A216 WCB / ASTM A351 CF8M / ASTM B148 / DUPLEX Stainless steel					
Stem	ASTM A479 Type 304 / 316 – ASTM A564 Type 630 – AISI 420 J2 / 403 DOUPLEX Stainless steel					
Seating Ring	EPDM; VITON	PTFE; RTFE	316 Stainless Steel; INCONEL	316 Stainless steel	EPDM / VITON+ 316 Stainless steel	EPDM / VITON+ Teflon
Packing	PTFE / Graphite / GRAFOIL / NON – ASBESTOS Packing					
Bearing	RTFE + 316 Stainless steel / RTFE + Fiberglass composite / Bronze / 316 Stainless steel / Steel					
Pressure Test	API std. 598	API std. 598	API Std. 598 / ANSI B16.34		API Std. 607/ BS 6755 part2	
Seat leakage Test	MAX 2, 2523 Kg/Cm ² G) as per API 598; Low pressure test is available upon request					
Marking	API std. 609 / MSS SP- 25					
Top Flange	ISO 5211					
Actuating	Lever / Gear box with hand wheel / Pneumatic Cylinder / Hydraulic Cylinder / Electric Actuator					

Section Drawing



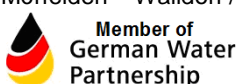
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**Nero High Performance Butterfly Valves****Dimension – High Performance (Double Offset Butterfly)****High Performance - Dimensions**

HIGH PERFORMANCE BUTTERFLY VALVE – DIMENSIONS															UNIT: mm					
ANSI CLASS 150																				
SIZE		FLANGE DIMENSION									MOUNTING BASE				Weight					
Inch	mm	H	H1	H2	H3	ϕd	L	A	B	ϕW	C	n1	h	h1	TYPE	n	h2	c1	WAFER	LUG
2"	50	330	80	148	102	55	43	267	150	145	120.7	4	5/8"	19.1	F07	4	10	70	6.3	6.5
3"	80	344	85	157	102	84	48	267	150	145	152.4	4	5/8"	19.3	F07	4	10	70	12	16
4"	100	402	134	166	102	104	54	267	150	145	190.5	8	5/8"	19.5	F07	4	10	70	20	22
6"	150	458	158	195	102	155	57	267	150	145	241.3	8	3/4"	22.4	F07	4	10	70	26	29
8"	200	580	198	250	132	205	64	267	255	200	298.5	8	3/4"	22.4	F10	4	12	102	32	36
10"	250	731	223	281	227	255	71	-	255	200	362.0	12	7/8"	25.4	F14	4	18	140	51	58
12"	300	813	266	320	227	305	81	-	210	350	431.8	12	7/8"	25.4	F14	4	18	140	72	87
14"	350	899	292	380	227	340	92	-	210	350	476.3	12	1"	28.4	F14	4	18	140	85	98
16"	400	986	333	418	235	380	102	-	230	350	539.8	16	1"	28.4	F16	4	22	165	116	143
18"	450	1012	347	430	235	430	114	-	230	350	577.9	16	1-1/8"	31.8	F16	4	22	165	160	210
20"	500	1091	383	468	240	480	127	-	240	350	635.0	20	1-1/8"	31.8	F16	4	22	165	207	260
24"	600	1192	427	525	240	590	154	-	240	350	749.3	20	1-1/4"	35.1	F16	4	22	165	320	400
26"	650	1375	545	570	260	607	165	-	350	400	806.5	24	1-1/4"	35.1	F25	8	19	254	350	430
28"	700	1440	580	600	260	654	165	-	350	400	863.6	28	1-1/4"	35.1	F25	8	19	254	370	460
30"	750	1590	600	625	365	698	190	-	390	605	914.4	28	1-1/4"	35.1	F25	8	19	254	465	520
32"	800	1625	615	645	365	755	190	-	390	605	977.9	28	1-1/2"	41.1	F25	8	19	254	490	580
36"	900	1780	695	720	365	825	203	-	390	605	1085.9	32	1-1/2"	41.1	F25	8	19	254	750	805
40"	1000	1940	775	800	365	950	216	-	390	605	1200.2	36	1-1/2"	41.1	F25	8	19	254	920	1105
44"	1100	2100	855	880	365	1040	241	-	440	605	1314.5	40	1-1/2"	41.1	F30	8	23	298	1105	1230
48"	1200	2180	890	925	365	1162	254	-	440	605	1422.4	44	1-1/2"	41.1	F30	8	23	298	1250	1320

High Performance - Dimensions

HIGH PERFORMANCE BUTTERFLY VALVE – DIMENSIONS															UNIT: mm					
ANSI CLASS 300																				
SIZE		FLANGE DIMENSION									MOUNTING BASE				Weight					
Inch	mm	H	H1	H2	H3	ϕd	L	A	B	ϕW	C	n1	h	h1	TYPE	n	h2	c1	WAFER	LUG
2"	50	339	87	155	102	55	43	267	150	145	127.0	8	3/4"	19.1	F07	4	10	70	6.3	7
3"	80	364	95	167	102	84	48	267	150	145	168.1	8	3/4"	22.4	F07	4	10	70	12	16
4"	100	426	146	178	102	104	54	267	150	145	200.2	8	3/4"	22.4	F07	4	10	70	20	22
6"	150	495	177	216	102	155	59	267	150	145	269.7	12	3/4"	22.4	F07	4	10	70	27	37
8"	200	618	217	269	132	205	73	267	255	200	330.2	12	7/8"	25.4	F10	4	12	102	45	63
10"	250	711	243	301	227	255	83	-	255	200	387.4	16	1"	28.4	F14	4	18	140	67	103
12"	300	847	280	340	227	305	92	-	210	350	450.9	16	1-1/8"	31.8	F14	4	18	140	85	112
14"	350	949	317	405	227	340	118	-	210	350	514.4	20	1-1/8"	31.8	F14	4	18	140	105	220
16"	400	1009	346	428	235	380	134	-	230	350	571.5	20	1-1/4"	35.1	F16	4	22	165	180	280
18"	450	1076	385	456	235	430	150	-	230	350	628.7	24	1-1/4"	35.1	F16	4	22	165	270	360
20"	500	1167	421	506	240	480	159	-	240	350	685.8	24	1-1/4"	35.1	F16	4	22	165	320	450
24"	600	1300	481	579	240	590	181	-	240	350	812.8	24	1-1/2"	41.1	F16	4	22	165	410	700
26"	650	1505	540	600	365	607	210	-	390	605	876.3	28	1-5/8"	44.5	F25	8	19	254	480	810
28"	700	1565	580	620	365	654	229	-	440	605	939.8	28	1-5/8"	44.5	F25	8	19	254	540	960
30"	750	1695	660	670	365	698	230	-	440	605	997.0	28	1-3/4"	47.8	F25	8	19	254	610	1110
32"	800	1730	675	690	365	755	241	-	440	605	1054.1	28	1-7/8"	50.8	F25	8	19	254	670	1205
36"	900	1925	770	790	365	825	241	-	440	605	1168.4	32	2"	53.8	F30	8	23	298	806	1310
40"	1000	2125	870	890	365	950	300	-	440	605	1155.7	32	1-5/8"	44.5	F30	8	23	298	980	1425

Other dimensions and pressure rating upon request

Subject to alternation

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Dimension – High Performance
High Performance – Torque & CV

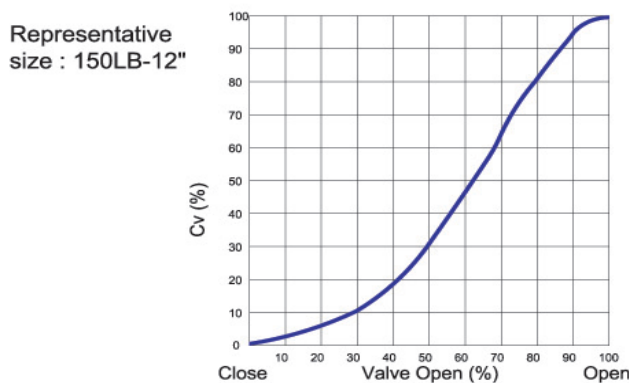
Torque Value

CV Value

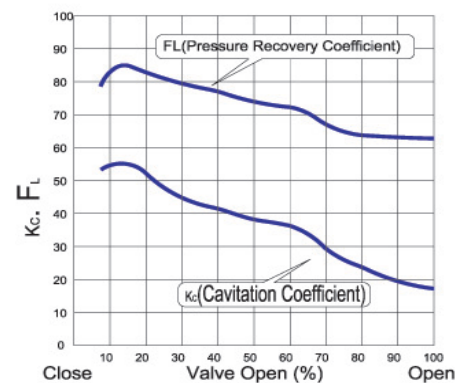
SIZE		MAX. DIFFERENTIAL PRESSURE (kgf/cm ²)						FULL OPEN		
Inch	mm	10.5 (150PSI)	20 (285PSI)	28.1 (400PSI)	42.2 (600PSI)	49.2 (700PSI)	104.1 (1480PSI)	CLASS		
								150	300	600
2"	50	3.1	3.5	4.4	4.6	4.7	-	92	92	-
2-1/2"	65	3.3	3.8	4.5	4.8	4.9	-	150	150	-
3"	80	3.5	4.3	4.8	5.3	5.5	11.8	260	260	155
4"	100	4.6	6.2	7.1	7.9	8.7	21.0	460	460	255
5"	125	6.2	8.8	9.4	11.0	12.2	27.8	760	760	710
6"	150	8.2	10.2	12.2	14.3	14.9	37.0	1150	1100	740
8"	200	14.3	17.3	19.4	22.4	24.5	67.8	2100	1900	1350
10"	250	20.9	29.1	34.7	40.8	45.6	105.0	3200	3000	2050
12"	300	29.9	43.8	53.5	64.2	69.1	160.6	4700	4500	2700
14"	350	44.7	72.2	100.9	126.4	138.7	254.9	5800	5500	3900
16"	400	63.7	106.0	138.7	168.2	185.1	328.3	8000	7600	5100
18"	450	86.2	137.7	185.1	218.7	235.5	408.4	10500	9900	5500
20"	500	130.0	197.3	246.8	291.6	314.1	547.1	14000	13000	7900
22"	550	161.6	242.2	295.7	358.9	381.4	-	-	-	-
24"	600	197.3	296.2	358.9	444.1	475.7	948.3	21000	19500	11100
26"	650	224.3	336.5	413.0	520.5	565.4	-	25000	-	-
28"	700	255.9	394.6	475.7	646.5	708.7	-	29000	-	-
30"	750	304.9	448.7	556.2	735.7	807.6	-	33500	-	-
32"	800	368.1	556.2	-	-	-	-	41000	-	-
34"	850	430.8	646.5	-	-	-	-	-	-	-
36"	900	493.5	744.4	-	-	-	-	55000	-	-
38"	950	565.9	843.3	-	-	-	-	-	-	-
40"	1000	655.7	987.1	-	-	-	-	70000	-	-
42"	1050	717.9	1076.8	-	-	-	-	-	-	-
44"	1100	781.1	1166.5	-	-	-	-	87000	-	-
46"	1150	852.5	1346.0	-	-	-	-	-	-	-
48"	1200	987.1	1480.6	-	-	-	-	104000	-	-

Flow Coefficient for HF- Series

Cv (Coefficient of Volume) is the number of U.S. gallons per minute of water required to pass through a valve with a pressure drop of 1 psi



Flow Characteristics



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Subject to alternation

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Standard Material List – Resilient Seated Butterfly

Standard Material List

Material according to ASTM								
STANDARD								
No	Part Name	Material					QTY	Remark
1	Body	A126 Class B	A395	A216 WCB	A351 CF8	A351- CF8M		
2	Disc	A351-CF8 ; A351 1- CF8M; B148					1	
3	Seat Ring	Buna- A (NBR); VITON, EPDM; NEOPRENE					1	
4	Stem	A276 -304; A276 – 316; A276 -410; A564-630					1	
5	Disc Bolt / Nut	A193 B7; A193 B8; A193 B8M					2	
6	Packing	TEFLON					2	
7	O - Ring	Buna- A (NBR); VITON, EPDM; NEOPRENE					3	
8	O-Ring Holder	ACETAL					1	
9	End Cover	A126 Class B	A395	A216 WCB	A351 CF8	A351- CF8M	1	
10	Bolt	A193 - B7; A193 - B8; A193 - B8M					4	
11	O - Ring	Buna- A (NBR); VITON, EPDM; NEOPRENE					1	

Seat Material and Working Temperature

Seat Material	Max. Working Temperature °C	
	Continuous	Intermittent
Buna- A (NBR)	-18°C ~ 93°C	-18°C ~ 100°C
EPDM	-40°C ~ 130°C	-40°C ~ 140°C
VITON	-18°C ~ 200°C	-18°C ~ 210°C
NEOPRENE	-16°C~ 90°C	-16°C ~ 100°C

Features:

- Bubble tight shut-off
- Light weight, compact size and easy installation
- General application Valve
- Bi- directional mounting
- Easy replacement seat

Application:

- Chemical processing
- Oil field
- Power Plant
- Hydrocarbon processing

Subject to alternation

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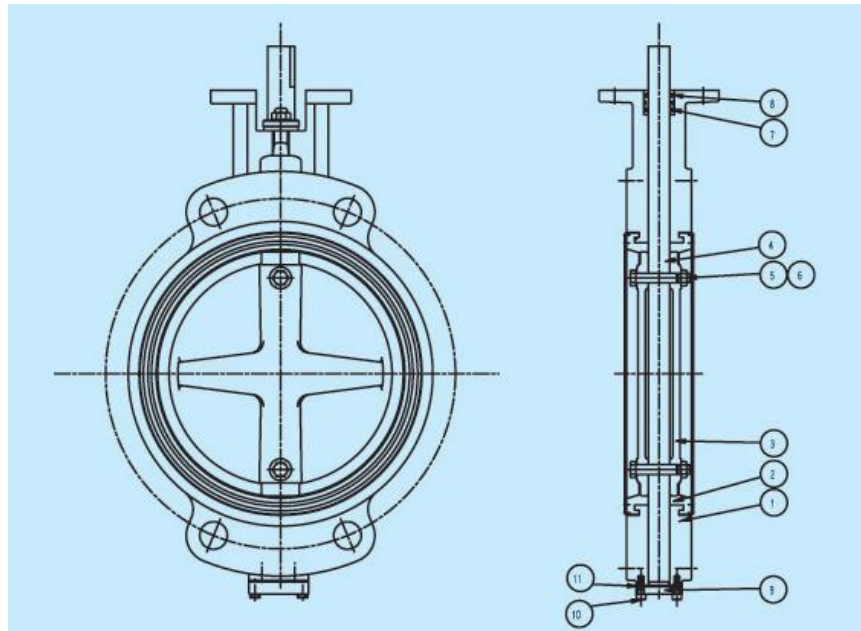
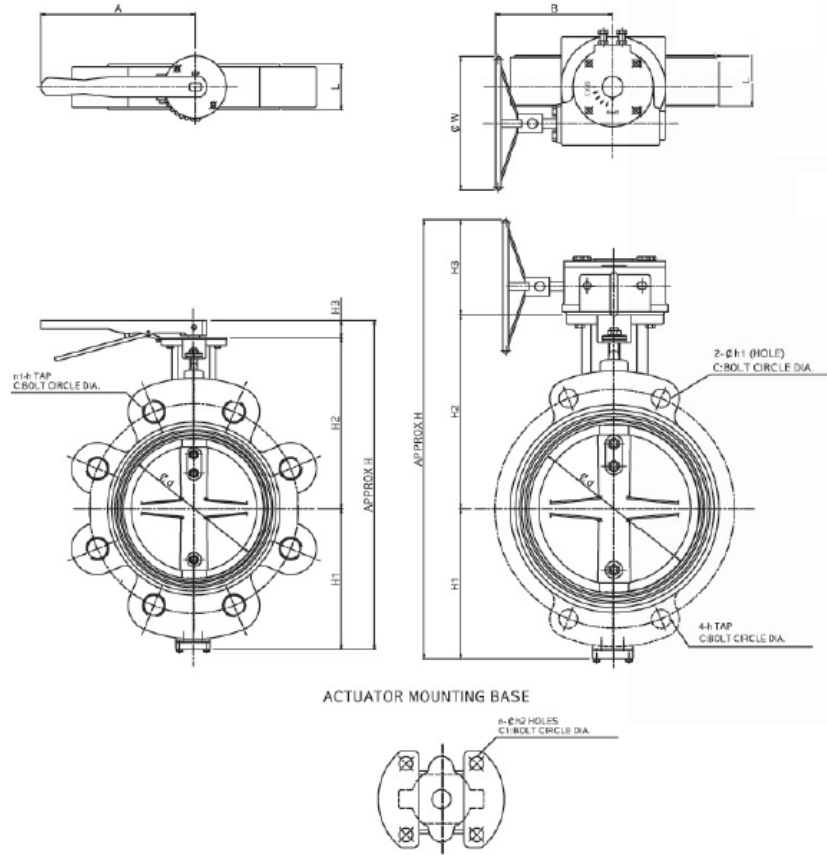
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Industrial Valves: DIN · API · ASME

Nero High Performance Butterfly Valves

Section Drawing

High Performance - Outdrawing



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Dimension – Resilient Seated Butterfly

Resilient Seated - Dimensions

RESILIENT SEATED – DIMENSIONS															UNIT: mm				
ANSI CLASS 150																			
SIZE		FLANGE DIMENSION									MOUNTING BASE			Weight					
Inch	mm	H	H1	H2	H3	ϕd	L	A	B	ϕW	C	n1	h	h1	n	h2	c1	WAFER	LUG
2"	50	330	65	130	105	50	43	260	180	150	127.7	4	5/8"X11unc	19	4	10	83	2.9	3.7
2-1/2"	65	324	74	145	105	64	46	260	180	150	139.7	4	5/8"X11unc	19	4	10	83	4	4.4
3"	80	343	90	148	105	80	46	260	160	150	152.4	4	5/8"X11unc	19	4	10	83	4.8	5.1
4"	100	390	110	175	105	100	52	330	180	150	190.5	8	5/8"X11unc	19	4	10	83	6.8	8.5
5"	125	418	125	188	105	124	56	330	180	150	215.9	8	3/4"X10unc	22.5	4	10	83	8.2	12.1
6"	150	443	138	200	105	150	56	330	180	150	241.3	8	3/4"X10unc	22.5	4	10	83	11.5	13
8"	200	559	165	230	164	200	60	470	260	260	298.5	8	3/4"X10unc	22.5	4	14	125	16	21
10"	250	629	200	265	164	250	68	-	260	260	362.0	12	7/8"X9unc	25.5	4	14	125	22	31
12"	300	704	235	305	164	300	78	-	260	260	431.8	12	3/4"X10unc	22.5	4	14	125	38	46
14"	350	762	268	330	164	334	78	-	260	260	476.3	12	1"X8unc	28.5	4	14	125	50	62
16"	400	926	362	310	254	390	102	-	300	400	539.8	16	1"X8unc	28.5	4	23	165	80	106
18"	450	981	337	390	254	434	108	-	300	400	577.9	16	1-1/8"X8unc	-	4	23	165	100	120
20"	500	1074	380	440	254	486	127	-	300	400	635.0	20	1-1/8"X8unc	-	4	23	165	142	172
22"	550	1130	415	455	260	526	154	-	350	400	692.2	20	1-1/4"X8unc	-	8	19	192	206	252
24"	600	1182	447	475	260	582	154	-	350	400	749.3	20	1-1/4"X8unc	-	8	19	192	234	290
26"	650	1260	475	525	260	622	165	-	350	400	806.5	24	1-1/4"X8unc	-	8	19	192	262	325
28"	700	1325	500	565	260	674	165	-	350	400	863.6	28	1-1/4"X8unc	-	8	19	192	310	385
30"	750	1505	540	600	365	724	165	-	390	605	914.4	28	1-1/4"X8unc	-	8	19	254	395	488
32"	800	1600	615	620	365	774	190	-	390	605	977.9	28	1-1/2"X8unc	-	8	19	254	470	582
34"	850	1680	640	675	365	836	200	-	390	605	1028.7	32	1-1/2"X8unc	-	8	19	254	522	655
36"	900	1740	670	705	365	872	200	-	390	605	1085.9	32	1-1/2"X8unc	-	8	19	254	583	725
40"	1000	1850	750	735	365	964	216	-	390	605	1200.0	36	1-1/2"X8unc	-	8	19	254	660	822

Resilient Seated – Torque & Cv

Torque Value

Cv Value

SIZE		MAX. DIFFERENTIAL PRESSURE (kgf/cm ²)		FULL OPEN
Inch	mm	5.3 (75 PSI)	105 (150 PSI)	
2"	50	2.0	2.5	115
2-1/2"	65	2.3	3.1	221
3"	80	3.4	4.1	425
4"	100	4.8	6.5	792
5"	125	7.3	9.0	1290
6"	150	11.2	14.6	2175
8"	200	14.6	19.1	3984
10"	250	29.2	35.9	4900
12"	300	43.8	53.8	8710
14"	350	57.1	91.8	11460
16"	400	78.5	117.3	13702
18"	450	123.4	173.3	18302
20"	500	157.0	246.8	22903
22"	550	208.0	342.6	27479
24"	600	241.7	432.3	32096
26"	650	314.1	550.6	34944
28"	700	403.8	656.7	37791
30"	750	471.1	780.1	42988
32"	800	527.2	874.9	48185
34"	850	605.7	987.1	54543
36"	900	683.2	1099.2	60901
40"	1000	1088.0	1884.4	60901

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Nero High Performance Butterfly Valves

Butterfly Valves – C Series, Torque Valves

Nero Butterfly valves C Series are manufactured as easy re-assembling, compact and high quality to be applied oil, gas, seawater and many application industries ranges.

Anticipated seating & Unseating Torque Valves – Nm (Fully Rated)

Shut Pressure kg/cm ² (PSI)									
Valve (mm)	Normal Service				Valve (mm)	Normal Service			
	0	3	6	10		0	3	6	10
	(0)	(50)	(85)	(150)		(0)	(50)	(85)	(150)
40	8	8	12	15	550	1050	1210	1850	3040
50	25	25	25	26	600	1150	1950	2700	3800
65	31	32	32	33	650	1320	2800	3100	4650
80	36	37	38	39	700	1450	3180	3940	5840
100	54	56	58	61	750	1695	3320	4050	6940
125	73	77	81	86	800	2870	3700	5050	7850
150	102	107	112	130	850	3350	4200	5790	8700
200	170	181	191	206	900	3750	4600	6100	9700
250	260	282	303	332	950	4250	5600	8700	9950
300	350	382	413	480	1000	7320	8500	9250	10500
350	486	570	653	820	1050	8600	8800	9950	10830
400	622	751	879	1050	1100	10500	9500	15300	14500
450	780	968	1155	1550	1200	11300	12300	17200	19100
500	961	1225	1490	2220					

For conditions that vary from hose noted, then apply the following application factor multipliers:

- Operated less than once per day: X 1,2
- Dry service with abrasives, cement: X 1,7
- Lubrication oils: X 0,5
- Temperature-Lower than minus 4,5°C: X 1,2
- Higher than 93°C: X 1,2
- Chemical attack: Consult Nero sales- department

Note:

To apply the as noted application factor multipliers

1. Find the base torque valve by selecting the required valve size from the left hand column and read across to the intended line pressure column. Note the torque valve. You can interpolate between line pressure valves.
2. Find the zero pressure torque for the same valve on the same row and subtract this zero pressure torque from valve in step 1
3. Multiply the zero pressure torque valve by the expected application factors
4. Add the difference between the zero pressure torque and the line pressure torque (valve of step 2 plus valve of step 3) to give the new torque valve specific to the actual service conditions.

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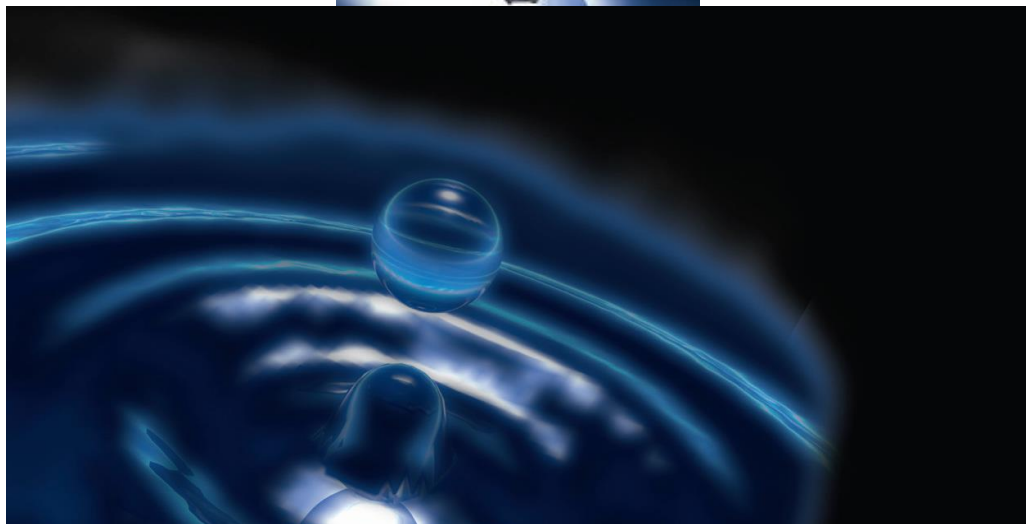
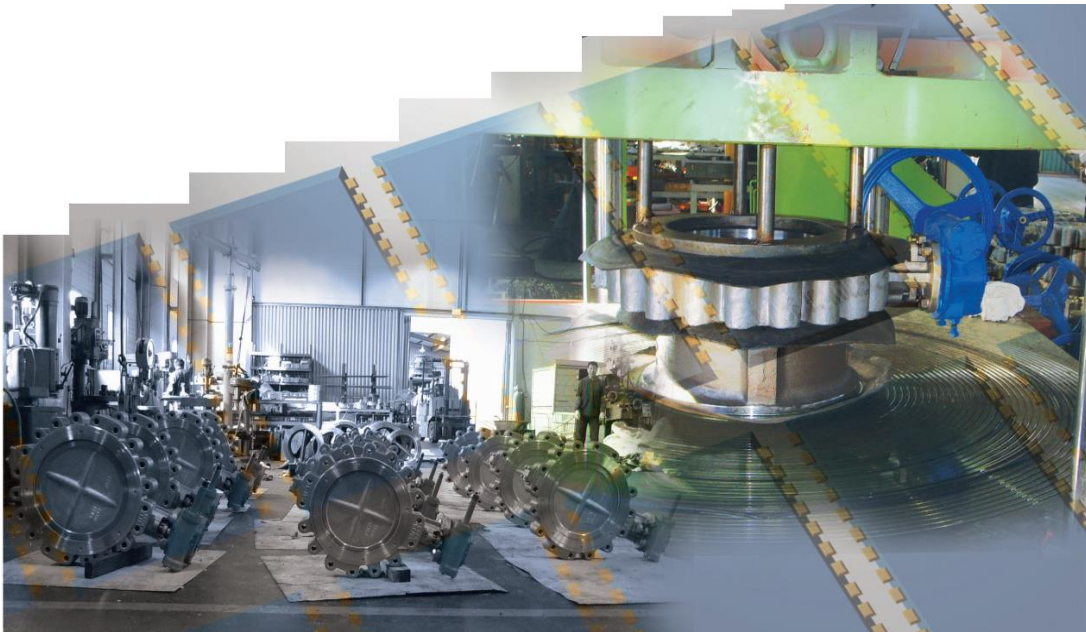
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Nero High Performance Butterfly Valves



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