

Neles™ high performance butterfly valve

BWX series

The BWX series butterfly valve has been especially designed for a wide range of industrial applications. It can be used for standard temperature up to +425 °C with CS-body material as well as in cryogenic applications with high quality CrNi steel. High efficiency by high flow capacity and low torques combined with fast maintenance capabilities, safety and reliable performance are main highlights of this valve series. The compact design of the valve permits rapid temperature balance and minimizes especially in cryogenic cool down processes the boil off loss.

Features

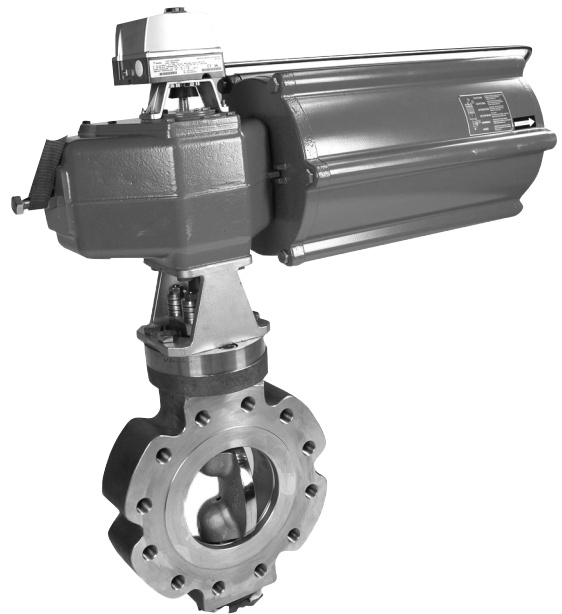
- Innovative design with free floating metallic seat
 - Protected seat in area of lowest tear and wear
- High flow rates
- Double eccentric design
- Temperature range: -200...+425 °C optional up to +600 °C depending on material selection
- Best for oxygen service
 - Oil & grease free assembly and test
 - BAM tested nonmetallic parts
- Differential pressure/temperature ratings in accordance with ASME B16.34
- DIN/EN flange drilling available
- Body types Lug and Double flange, other as option
- Cover plate for standard temperature
- For cryogenic applications 3 different standard extension lengths

Body

The valve body is available as lug or double flange design as standard. Other body types or special face-to-face dimensions as well as butt welded ends are available as option. The body is a monolithic design without a clamp ring. This means high safety even under full pressure with open pipe end, no additional parts and no screws in gasket flange face area.

Disc

The standard disc is made of a high quality stainless steel or a high strength martensitic steel, and has an innovative double eccentric design, which brings a perfect and reliable seat performance with long life endurance.



Shaft and drive shaft design

The BWX butterfly valve has a stub shaft design and full bore port which gives a high flow coefficient. A robust and easy shaft to disc polygon connection requires no additional fasteners inside the flow area and guarantees a fast and effective maintenance of the entire valve.

It is practically free of play and exceeds the strength of the top of the shaft. A visible mark at the shaft clearly indicates the position of the disc.

High safety factor has been included to the bearing design. The thrust bearing is protected from the flow, located in the body neck and realizes the blow out protection of the shaft. The gland packing is live loaded to ensure minimum emissions and is located directly after the upper shaft bearing which prevents any side forces from the packing.

Low cost of ownership

- Significantly reduced number of parts reduce stock keeping cost of spares.
- Extremely high cycle life minimizes the need of maintenance and increases Mean Time Between Failure (MTBF)
- Maintenance friendly design allows a very fast dis- and reassemble of the valve without special tools.

Seat

The BWX series is equipped with a floating full metal seat located independently in the body. Additionally the seat is protected in the body in an area of lowest wear and tear. This design principle ensures high duration with constant, repeatable and reliable tightness performance even during rapid temperature changes and differentials within the valve. The innovative design gives low operating torques and clears the disc from seat after a few degrees of opening which extends the life of the BWX valve.

Oxygen service

A certified cleaning procedure in a special clean environment guarantees absolutely free of oil and grease parts for oxygen applications. This means that due design features the valves does not require any kind of grease during assembly and testing procedure. Additionally the flow area does neither contain any bolts, pins or nuts nor any sharp edges or corners. All nonmetallic parts are BAM tested under pure gaseous or liquid oxygen up to rated pressure.

Actuator

The BWX valve series is equipped with a ISO 5211 mounting face to the actuator. Neles® pneumatic or manual gear actuators are used as standard. Positioners can be used optional. The following table gives a rough overview for BWX valves equipped with standard B1 actuators at full rated pressure.

NPS/DIN	CI 150 PN10/16		CI 300 PN25/40		CI 600 PN63	
4/100	B1C9	B1J10	B1C9	B1J10	B1C13	B1J12
6/150	B1C11	B1J12	B1C11	B1J12	B1C17	B1J16
8/200	B1C13	B1J16	B1C13	B1J16	B1C25	B1J20
10/250	B1C17	B1J16	B1C17	B1J20	B1C32	B1J25
12/300	B1C17	B1J16	B1C20	B1J20	B1C32	B1J25
14/350	B1C20	B1J20	B1C25	B1J25	B1C40	B1J32
16/400	B1C20	B1J20	B1C25	B1J25	B1C40	B1J32
18/450	B1C25	B1J25	B1C32	B1J32	B1C50	-
20/500	B1C25	B1J25	B1C40	B1J32	B1C50	-
24/600	B1C32	B1J32	B1C50	B1J32	B1C60	-

Standard Neles actuators B1 series @ full dp

Cold shock test

Besides available standard leakage a cold shock test can be performed. This test demonstrates the excellent and repeatable valve performance under real cryogenic operating conditions.

The valve is cooled down with liquid nitrogen. When the valve has reached -196 °C, the valve is closed and pressure is applied. Leakage – if any – can be monitored. Acceptance criteria is no visible leakage.



Cold shock test

Flow capacity

NPS/DIN	CI 150 PN10/16	CI 300 PN25/40	CI 600 PN63
	Cv [gal/min]		
4/100	309	309	223
6/150	1313	1021	732
8/200	2816	2204	1622
10/250	4678	3437	2079
12/300	7446	5261	3375
14/350	9904	7664	4851
16/400	12361	10067	6014
18/450	15756	13572	7971
20/500	19151	17076	11886
24/600	29770	24124	18017

BWX flow capacity

Technical specifications

Valve ratings

- Classes 150, 300 and 600 in accordance with ASME B16.34 and BS 5351.

Sizes and end connections

- ASME cl. 150, cl. 300 and cl.600 are available in sizes 4" - 24" (DN100 – DN600)
- Flanges are designed as per ASME B16.5
- Flange drillings are available
 - ASME B16.5: cl. 150, cl. 300, Cl. 600
 - EN 1092: PN10, PN16; PN25, PN40, PN63, PN100

Face to face dimensions

- Lug: API 609 – Category B (all ratings)
- Double flange ASME cl150, PN10, PN16:
 - API 609 Category B (short pattern), EN558 Serie 13
- Double flange ASME cl300, PN25, PN40:
 - API 609 Category B (short pattern), EN558 Serie 14
- Double flange ASME cl600, PN63, PN100:
 - API 609 Category B (short pattern), EN558 Serie 14

Valve tightness

Standard U-type seat

- Preferred pressure direction
 - ANSI Class V, EN12266 B

Optional:

- API 598, ANSI Class VI

Control seat

- ANSI Cl. III
- ANSI Cl. II

Safety features

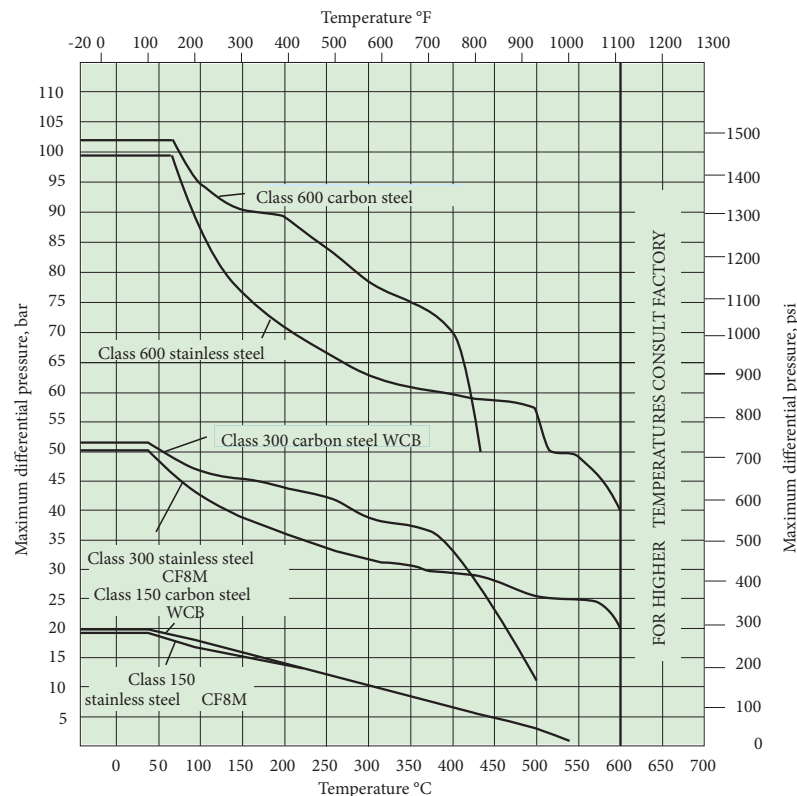
- Fire-tested per API 607, 6th ed. in preferred pressure direction
- Fugitive emission with life loaded stem sealing as standard acc. ISO 15848
- Inherent shaft blow out safety
- Oil and grease free assembled and tested for GOX/LOX applications

Options

- NACE MR103/MR0175
- Steam jacket, heat tracing
- Double packing with leak off
- Butt welded ends
- Double flange long pattern acc. API609
- Wafer

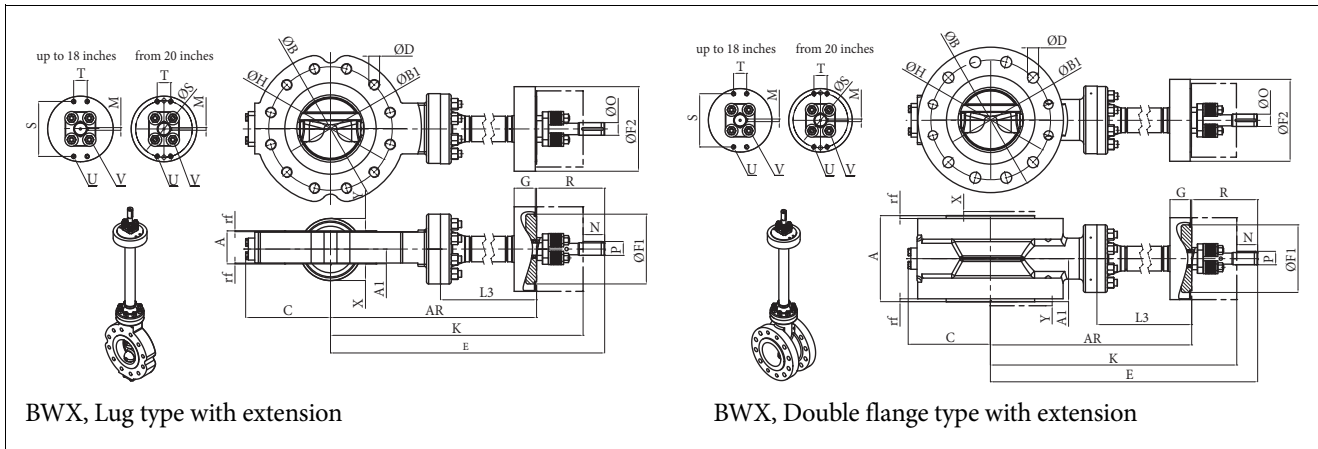
Pressure/temperature ratings for valve body

Other body materials then WCB or CF8M are possible on request.



Note: Materials LCC, LCB, WC6, 5A and 254 SMO available on request.

Dimensions



Flange drilling (pitch cycle, threads, numbers, bore diameter) are according ASME B16.5, EN 1092 PN10, PN16, PN25, PN40, PN63 and PN100 for all sizes.

Standard dimensions [mm] CL150 - PN10 - PN16																													
NPS/DIN	A		AR ¹⁾	A1 ³⁾	oB	C	E	oF2	oF1	G	K	L3 ^{*)}	M	N	oO	P	R	rf		S	T	U	V	X	Y	X ₂ Y		weight	
	Lug ¹⁾	DF ²⁾																Lug&DF	DF							Lug	DF		
4/100	54	127	860	50	230	136	996	200	155	50	950	680	6.35	46	25	27.8	136	2	2	110	32	M12	M10	13	14	0	30	51	
6/150	57	140	860	52	285	161	996	200	155	50	950	680	6.35	46	25	27.8	136	2	2	110	32	M12	M10	25	17	0	35	53	
8/200	64	152	860	55	345	187	996	200	155	50	950	650	6.35	46	25	27.8	136	2	2	110	32	M12	M10	49	41	3	49	71	
10/250	71	165	860	62	405	247	1021	200	165	50	970	600	6.35	51	30	32.9	161	2	2	130	32	M12	M10	73	60	23	70	106	
12/300	81	178	1060	70	485	272	1221	200	165	50	1170	760	6.35	51	30	32.9	161	2	2	130	32	M12	M10	93	79	39	102	125	
14/350	92	190	1060	78	535	303	1248	260	210	50	1180	710	9.52	68	40	44.2	188	2	2	160	40	M16	M10	112	98	56	160	188	
16/400	102	216	1060	84	595	328	1248	260	210	50	1180	710	9.52	68	40	44.2	188	2	2	160	40	M16	M10	131	116	74	188	227	
18/450	114	222	1060	96	635	369	1250	260	210	50	1180	630	12.7	70	50	55.5	190	2	2	160	40	M16	M14	150	132	84	257	308	
20/500	127	229	1060	109	715	423	1270	260	210	50	1200	630	12.7	70	50	55.5	210	2	2	160	55	M20	M14	161	145	99	305	340	
24/600	154	267	1060	124	840	498	1359	300	290	50	1240	580	19.05	119	70	78.2	299	2	2	230	90	M24	M16	190	169	129	519	570	

- 1) Lug type according API 609 Category B
- 2) Double flange type according API609 Category B (short), EN558 – Basic series 13
- 3) A1 for double flange (DF) body is 0.5*A (DF)
- *) Option: +200 mm / +400 mm

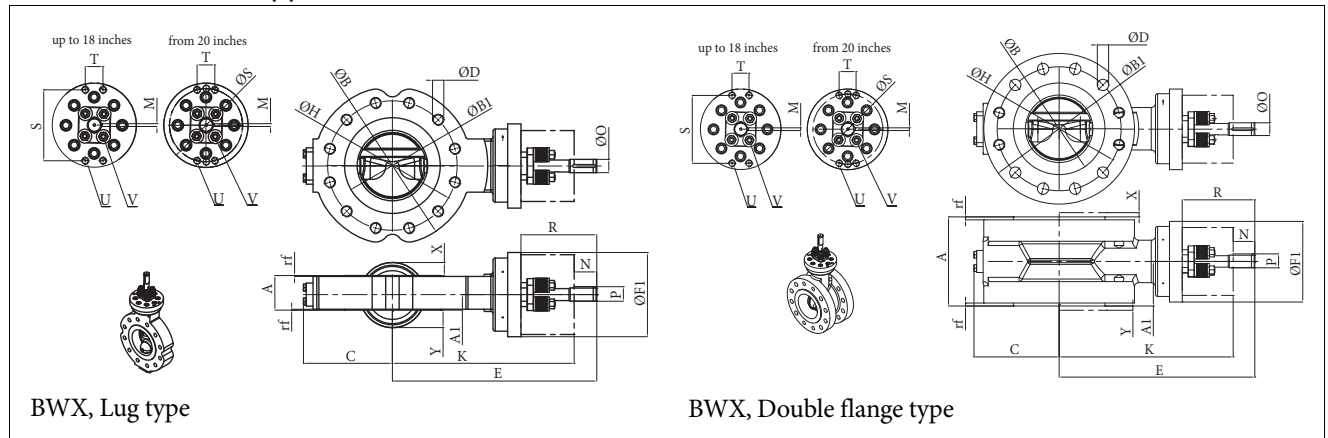
Standard dimensions [mm] CL300- PN25 - PN40																													
NPS/DIN	A		AR ^{*)}	A1 ³⁾	oB	C	E	oF2	oF1	G	K	L3 ^{*)}	M	N	oO	P	R	rf		S	T	U	V	X	Y	X ₂ Y		weight	
	Lug ¹⁾	DF ²⁾																Lug	DF							Lug	DF		
4/100	54	190	860	23	255	136	996	200	155	50	950	680	6.35	46	25	27.8	136	2	2	110	32	M12	M10	13	14	0	31	53	
6/150	59	210	860	25	320	187	996	200	155	50	950	650	6.35	46	25	27.8	136	2	2	110	32	M12	M10	25	17	0	46	69	
8/200	73	230	860	31	380	224	1021	200	165	50	970	600	6.35	51	30	32.9	161	2	2	130	32	M12	M10	49	39	0	73	105	
10/250	83	250	860	36	450	258	1048	260	210	50	980	600	9.52	68	40	44.2	188	2	2	160	40	M16	M10	68	57	0	123	185	
12/300	92	270	1060	41	520	283	1248	260	210	50	1180	710	9.52	68	40	44.2	188	2	2	160	40	M16	M10	85	74	0	161	196	
14/350	117	290	1060	52	585	353	1270	260	210	50	1200	710	12.7	70	50	55.5	210	2	2	160	55	M20	M14	105	94	11	237	278	
16/400	133	310	1060	70	660	399	1270	260	210	50	1200	630	12.7	70	50	55.5	210	2	2	160	55	M20	M14	116	103	23	319	384	
18/450	149	330	1060	71	710	423	1359	300	290	50	1240	580	19.05	119	70	78.2	299	2	2	230	90	M24	M16	122	129	37	468	562	
20/500	159	350	1060	78	775	458	1359	300	290	50	1240	580	19.05	119	70	78.2	299	2	2	230	90	M24	M16	142	135	48	543	652	
24/600	181	390	1060	87	915	567	1386	360	350	50	1240	510	22.23	146	85	94.7	326	2	2	230	90	M24	M16	165	162	68	874	1042	

- 1) Lug type according API 609 Category B
- 2) Double flange type according API609 Category B (short), EN558 – Basic series 143) A1 for double flange (DF) body is 0.5*A (DF)
- 3) A1 for double flange (DF) body is 0.5*A (DF)
- *) Option: +200 mm / +400 mm

Standard dimensions [mm] CL600- PN63																													
NPS/DIN	A		AR ¹⁾	A1 ³⁾	oB	C	E	oF2	oF1	G	K	L3 ^{*)}	M	N	oO	P	R	rf		S	T	U	V	X	Y	X ₂ Y		weight	
	Lug ¹⁾	DF ²⁾																Lug	DF							Lug	DF		
4/100	64	190	860	30	275	165	996	200	155	50	950	680	6.35	46	25	27.8	136	2	7	110	32	M12	M10	20	15	0	39	66	
6/150	78	210	860	35	355	201	1021	200	165	50	970	600	6.35	51	30	32.9	161	2	7	130	32	M12	M12	39	31	0	77	115	
8/200	102	230	860	47	430	238	1048	260	210	50	980	600	9.52	68	40	44.2	188	2	7	160	40	M16	M14	53	45	0	134	192	
10/250	117	250	860	57	510	323	1110	260	210	50	1040	560	12.7	70	50	55.5	250	2	7	160	55	M20	M16	64	60	0	208	280	
12/300	140	270	1060	70	585	353	1359	300	290	50	1240	660	19.05	119	70	78.2	299	2	7	230	90	M24	M20	73	74	9	354	430	
14/350	155	290	1060	78	655	373	1359	300	290	50	1240	660	19.05	119	70	78.2	299	2	7	230	90	M24	M20	89	90	22	449	526	
16/400	178	310	1060	89	715	430	1386	360	350	50	1240	560	22.23	146	85	94.7	326	2	7	230	90	M24	M20	100	101	34	637	765	
18/450	200	330	1060	100	745	467	1386	360	350	50	1240	560	22.23	146	85	94.7	326	2	7	230	90	M24	M20	108	109	44	771	1079	
20/500	216	350	1060	108	870	500	1436	360	355	50	1280	510	22.23	156	95	104.8	376	2	7	Ø330	M30	M30	131	132	65	1160	1392		
24/600	232	390	1060	116	940	579	1460	360	355	50	1280	460	25.4	180	105	116	400	2	7	Ø330	M30	M30	172	172	93	1345	1547		

- 1) Lug type according API 609 Category B
- 2) Double flange type according API609 Category B (short), EN558 – Basic series 14
- 3) A1 for double flange (DF) body is 0.5*A (DF)
- *) Option: +200 mm / +400 mm

BWX for standard applications



Flange drilling (pitch cycle, threads, numbers, bore diameter) are according ASME B16.5, EN 1092 PN10, PN16, PN25, PN40, PN63 and PN100 for all sizes.

Standard dimensions [mm] CL150 - PN10 - PN16																								
NPS/DIN	A		A1 ³⁾	øB	C	E	øF1	K	M	N	øO	P	R	rf		S	T	U	V	X	Y	X,Y	weight	
	Lug ¹⁾	DF ²⁾	Lug											Lug&DF	Lug								DF	Lug
4/100	54	127	50	230	136	340	155	294	6.35	46	25	27.8	136	2	110	32	M12	M10	13	14	0	27	46	
6/150	57	140	52	285	161	340	155	294	6.35	46	25	27.8	136	2	110	32	M12	M10	25	17	0	32	49	
8/200	64	152	55	345	187	376	155	330	6.35	46	25	27.8	136	2	110	32	M12	M10	49	41	3	44	64	
10/250	71	165	62	405	247	446	165	395	6.35	51	30	32.9	156	2	130	32	M12	M10	73	60	23	63	96	
12/300	81	178	70	485	272	491	165	440	6.35	51	30	32.9	161	2	130	32	M12	M10	93	79	39	92	113	
14/350	92	190	78	535	303	557.5	210	490	9.52	68	40	44.2	171	2	160	40	M16	M10	112	98	56	144	170	
16/400	102	216	84	595	328	574.5	210	507	9.52	68	40	44.2	188	2	160	40	M16	M10	131	116	74	169	205	
18/450	114	222	96	635	369	654.5	210	585	12.7	70	50	55.5	188	2	160	40	M16	M14	150	132	84	231	277	
20/500	127	229	109	715	423	676.5	210	607	12.7	70	50	55.5	210	2	160	55	M20	M14	161	145	99	275	308	
24/600	154	267	124	840	498	775	290	656	19.1	119	70	78.2	250	2	230	90	M24	M16	190	169	129	467	513	

- 1) Lug type according API 609 Category B
- 2) Double flange type according API609 Category B (short), EN558 – Basic series 13
- 3) A1 for double flange (DF) body is 0.5*A (DF)

Standard dimensions [mm] CL300- PN25 - PN40																								
NPS/DIN	A		A1 ³⁾	øB	C	E	øF1	K	M	N	øO	P	R	rf		S	T	U	V	X	Y	X,Y	weight	
	Lug ¹⁾	DF ²⁾	Lug											Lug&DF	Lug								DF	Lug
4/100	54	190	23	255	136	352.5	155	307	6.35	46	25	27.8	136	2	110	32	M12	M10	13	14	0	27	45	
6/150	59	210	25	320	187	382.5	155	337	6.35	46	25	27.8	136	2	110	32	M12	M10	25	17	0	40	60	
8/200	73	230	31	380	224	461	165	410	6.35	51	30	32.9	156	2	130	32	M12	M10	49	39	0	65	95	
10/250	83	250	36	450	258	476	210	408	9.52	68	40	44.2	171	2	160	40	M16	M10	68	57	0	112	169	
12/300	92	270	41	520	283	603	210	535	9.52	68	40	44.2	188	2	160	40	M16	M10	85	74	0	139	210	
14/350	117	290	52	585	353	623	210	553	12.7	70	50	55.5	208	2	160	55	M20	M14	105	94	11	210	247	
16/400	133	310	70	660	399	640	210	570	12.7	70	50	55.5	210	2	160	55	M20	M14	116	103	23	278	335	
18/450	149	330	71	710	423	730	290	611	19.1	119	70	78.2	250	2	230	90	M24	M16	122	129	37	408	571	
20/500	159	350	78	775	458	779	290	660	19.1	119	70	78.2	299	2	230	90	M24	M16	142	135	48	472	566	
24/600	181	390	87	915	567	849	350	703	22.2	146	85	94.7	299	2	230	90	M24	M16	165	162	68	761	981	

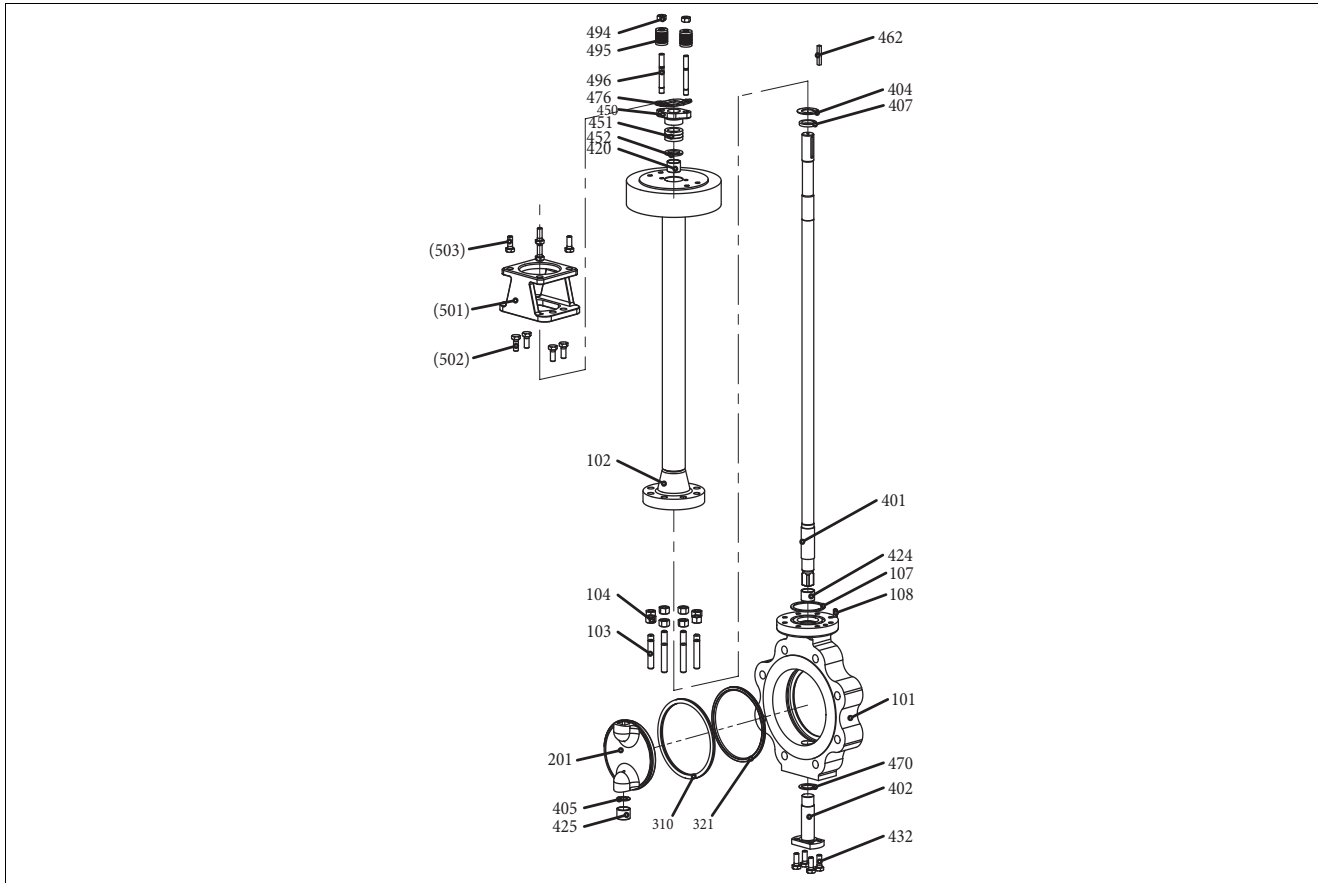
- 1) Lug type according API 609 Category B
- 2) Double flange type according API609 Category B (short), EN558 – Basic series 14
- 3) A1 for double flange (DF) body is 0.5*A (DF)

Standard dimensions [mm] CL600 - PN63 - PN100																								
NPS/DIN	A		A1 ³⁾	øB	C	E	øF1	K	M	N	øO	P	R	rf		S	T	U	V	X	Y	X,Y	weight	
	Lug ¹⁾	DF ²⁾	Lug											Lug	DF								Lug	DF
4/100	64	190	30	275	165	316	155	270	6.35	46	25	27.8	136	2	7	110	32	M12	M10	20	15	0	33	56
6/150	78	210	35	355	201	421	165	370	6.35	51	30	32.9	161	2	7	130	32	M12	M12	39	31	0	66	104
8/200	102	230	47	430	238	448	210	380	9.52	68	40	44.2	188	2	7	160	40	M16	M14	53	45	0	108	169
10/250	117	250	57	510	323	510	210	440	12.7	70	50	55.5	210	2	7	160	55	M20	M16	64	60	0	189	254
12/300	140	270	70	585	353	699	290	580	19.1	119	70	78.2	299	2	7	230	90	M24	M20	73	74	9	304	373
14/350	155	290	78	655	373	699	290	580	19.1	119	70	78.2	299	2	7	230	90	M24	M20	89	90	22	396	464
16/400	178	310	89	715	430	826	350	680	22.2	146	85	94.7	326	2	7	230	90	M24	M20	100	101	34	554	666
18/450	200	330	100	745	467	826	350	680	22.2	146	85	94.7	326	2	7	230	90	M24	M20	108	109	44	671	938
20/500	216	350	108	870	500	926	355	770	22.2	156	95	105	376	2	7	Ø330	M30	M30	M30	131	132	65	1008	1079
24/600	232	390	116	940	579	1000	355	820	25.4	180	105	116	400	2	7	Ø330	M30	M30	M30	172	172	93	1170	1331

- 1) Lug type according API 609 Category B
- 2) Double flange type according API609 Category B (short), EN558 – Basic series 14
- 3) A1 for double flange (DF) body is 0.5*A (DF)

Exploded view

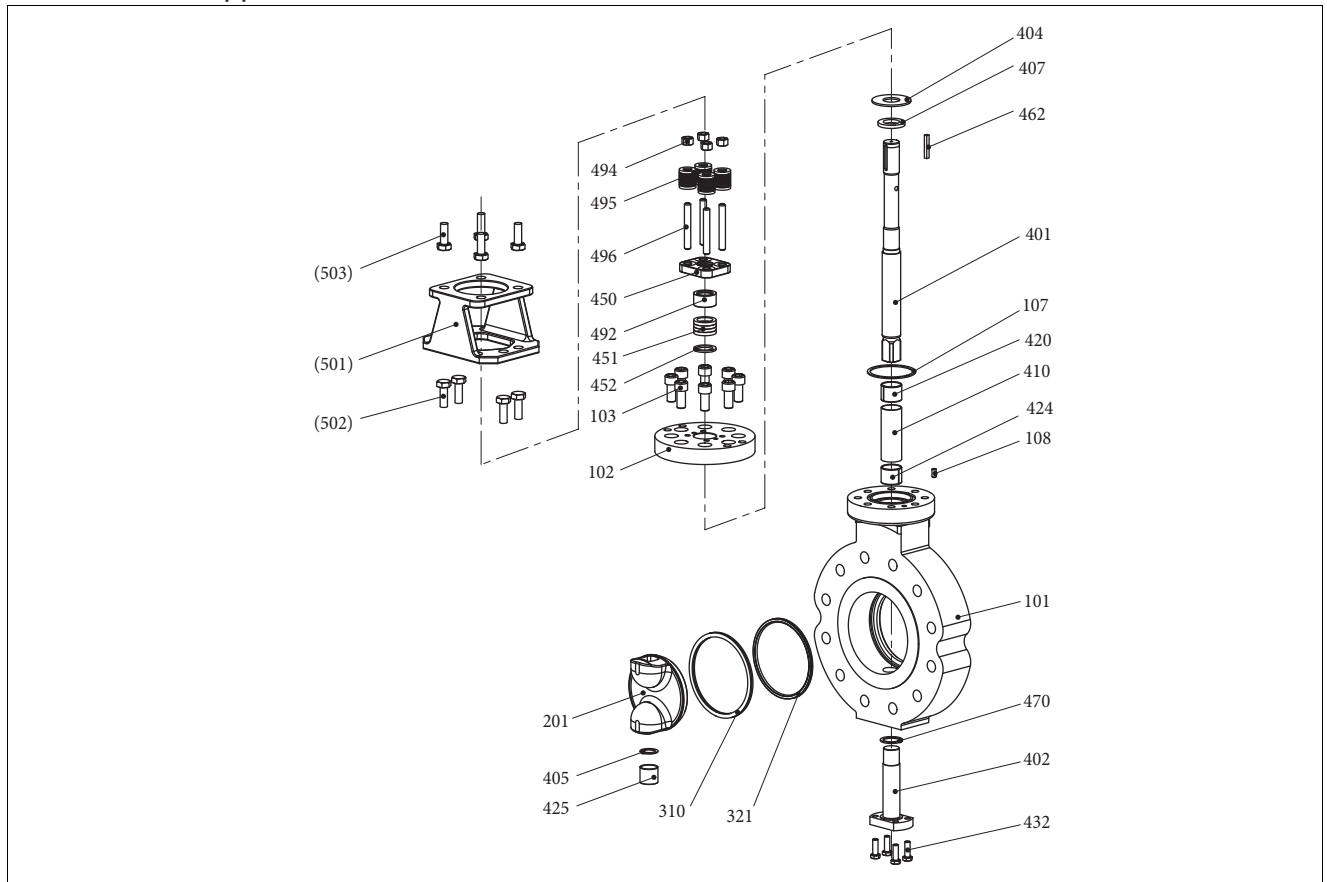
BWX with extension for cryogenic applications



Part list

Part nr.	Qty.	Description	Material
101	1	BODY	A351 gr. CF8M
102	1	EXTENSION	AISI 316
103	8	STUD	Stainless steel
104	8	HEXAGON NUT	Stainless steel
107	1	SEAL	Graphite
108	1	WORM SCREW	Stainless steel
201	1	DISC	A351 gr. CF8M
310	2	RETAINING RING	1.4571
321	1	SEALING ELEMENT	UNS N07718
401	1	DRIVE SHAFT	ASTM A479 gr. XM-19-H
402	1	STUB SHAFT	ASTM A479 gr. XM-19-H
404	1	THRUST WASHER	BRONZE+PTFE
405	1	THRUST WASHER	BRONZE+PTFE
407	1	THRUST WASHER	ASTM A479 gr. XM-19-H
420	1	BEARING SLEEVE	BRONZE+PTFE
424	1	BEARING SLEEVE	BRONZE+PTFE
425	1	BEARING SLEEVE	BRONZE+PTFE
432	4	HEXAGON SCREW	Stainless steel
450	1	GLAND	A351 gr. CF8M/1.4408
451	3	PACKING RING	Graphite
452	1	BOTTOM RING	AISI 316
462	1	KEY	1.4460
470	1	SEAL	Graphite
476	2	RETAINER PLATE	AISI 316L
494	2	HEXAGON NUT	Stainless steel
495	2	DISC SPRING SET	1.8159
496	2	STUD	Stainless steel

BWX standard applications



Part list

Part nr.	Qty.	Description	Material
101	1	BODY	ASTM A216 gr. WCB/1.0619
102	1	BONNET	ASTM A516 gr. 70 / 1.0566
103	8	CYLINDER HEAD SCREW	ISO 3506 A2-70
107	1	SEALING	Graphite
108	1	WORM SCREW	Stainless steel
201	1	DISC	1.4317/CA6NM+ENP
310	2	RETAINING RING	1.4571
321	1	SEALING ELEMENT	A182 F6NM
401	1	DRIVE SHAFT	17-4PH+NITR
402	1	STUB SHAFT	17-4PH+NITR
404	1	THRUST WASHER	Ni-Resist
405	1	THRUST WASHER	Ni-Resist
407	1	THRUST WASHER	17-4PH
410	1	SPACER RING	1.4571
420	1	BEARING SLEEVE	Ni-Resist
424	1	BEARING SLEEVE	Ni-Resist
425	1	BEARING SLEEVE	Ni-Resist
432	4	HEXAGON SCREW	ISO 3506 A2-70
450	1	BLANK GLAND	AISI 316
451	4	PACKING RING	Graphite
452	1	ANTI EXTRUSION RING	AISI 316
462	1	KEY	1.4460
470	1	SEALING	Graphite
476	2	RETAINER PLATE	316L/1.4435
492	1	COMPRESSION SLEEVE	AISI 316
494	4	HEXAGON NUT	ISO 3506 A2-70
495	4	DISC SPRING SET	1.8159+ENP
496	4	STUD	ISO 3506 A2-70

How to order

Standard selection:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
BWX	4	C	1	A	Z	2	08	A	A	N	D	G1	-	-
BWX cryo type for O2 service, API lugged, cl 150 full rated, metallic seat, soft bearings, oxygen service, extension: AR=1060, NPS 8, body CF8M, disc CF8M, shafts XM19, seat Inconel, live loaded packing for oxygen service														
BWX	3	F	1	B		12	P	N2	C	E	G3			
BWX standard type, double flange, cl 600, metallic seat, metallic bearings, no extension, NPS 12, body WCB, disc CA6NM, shaft 17-4PH, seat UNS S41000, live loaded packing for fire safe														

1. sign	PRODUCT SERIES / DESIGN
	Monolithic body design without clamp ring, butterfly valve, with free floating metal seat, 3 bearings, stub shaft design. Trim full rated Typical body design: Lug, Flanged; other as option. Standard FtF acc. API 609 <ul style="list-style-type: none"> cryogenic version: 4"...24", cl 150...600, PN 10...PN 100 with cryo extension standard version: 4"...24" cl 150 ...cl 600 / PN 10...PN100, no extension

2. sign	BODY CONSTRUCTION
2	Flanged, long pattern (without threaded holes) (on request)
3	Flanged, short pattern (with threaded holes)
4	Lug type
6	Wafer type (on request)
Y	Special, to be specified (on request)

3. sign Body	BODY PRESSURE RATING
C	ASME class 150
D	ASME class 300
F	ASME class 600
J	PN 10
K	PN 16
L	PN 25
M	PN 40
N	PN 63
P	PN 100

4. sign	SEAT DESIGN
1	U-Type metal seat with coating Standard tightness in preferred direction: API 598, FCI 70.2 cl V, EN12266 B Optional tightness in preferred direction: FCI 70.2 cl VI, FCI 70.2 cl V (Air), EN12266 B
6	Shoulder (Step seat) for control application: FCI 70.2 class III
7	No seat for control application: FCI 70.2 class II

5. sign	BEARINGS / BODY
A	Soft bearings, PTFE or eq. on sinter metal. Back material is bronze. Tmax = 280 °C
B	Metal bearings for high temperature. Tmax = 600°C

6. sign	APPLICATION
	Standard
N	All wetted parts acc. NACE
Z	Oxygen Service for GOX/LOX applications all internal non-metallic parts have valid test report from notified body (BAM, WHA, etc)

7. sign	EXTENSION
	Standard (without cryo extension)
0	300
1	860
2	1060
3	1260
4	1460
5	1660
Y	Special; extension length defined in dimension drawings

8. sign	SIZE (ASME rating = inch / PN rating = metric)
	Inch: 04, 06, 08, 10, 12, 14, 16, 18, 20, 24 Metric: 100, 150, 200, 250, 300, 350, 400, 450, 500, 600

9. sign	BODY MATERIAL	10. sign	DISC MATERIAL	11. sign	SHAFT MATERIAL
A	ASTM A351 CF8M /1.4408	A	ASTM A351 CF8M eq. AISI 316 / 1.4408	N	XM-19 (Nitronic 50 HS)
P	ASTM A216 WCB / A.0619	N2	ASTM A487 CA6NM (similar to 1.4317)	N2	1.4021 equal SS410

12. sign	SEAT MATERIAL
C	U-type metallic seat, 1.4923 + silver coated (disc: ENP coated 30 microns or equal) T = -200 ... +600 °C
D	U-type metallic seat, UNS 07718 + silver coated (disc: ENP coated 30 microns or equal) T = -200 ... +850 °C
F	U-type metallic seat, UNS S41500 / F182 F6NM / 1.4313 + silver coated (disc: ENP coated 30 microns or equal) T = -75 ... +425 °C
Z	Control seat: Step seat = body material
X	Control seat: No seat; swing through

13. sign	PACKING CONSTRUCTION
T3	Live loaded PTFE packing. For emission certificate please contact factory
G1	Live loaded graphite packing, compatible to GOX/LOX
G3	Live loaded graphite packing, Firesafe for emission certification, please contact factory
Y	Special, to be specified

14. sign	SPECIAL FLANGE FACING TYPES/FORMS
-	Ra 3.2 - 6.3, standard, without sign covers:
•	EN 1092-1 Type B1 (Ra 3.2 - 12.5)
•	ASME B16.5, Ra 3.2 - 6.3 (125 - 250 µin)
•	DIN 2526 Form E (Ra 4)
05	Ring Joint
Y	Special, to be specified

15. sign	FLANGE
	without sign according to valve body pressure rating PN-rating • EN1092-1 ASME-rating
-	• ASME B 16.5 #150-#1500 size 4 - 24, #2500 size max 12" • ASME B 16.47 Series B #150 - 600 size 26" - 60", #900 size max 48" - Bigger flange drilling has to be agreed with the factory. • Butt weld ends acc. ASME B16.25, Pipe diameter and pipe class to be defined
Y	Special, to be specified

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