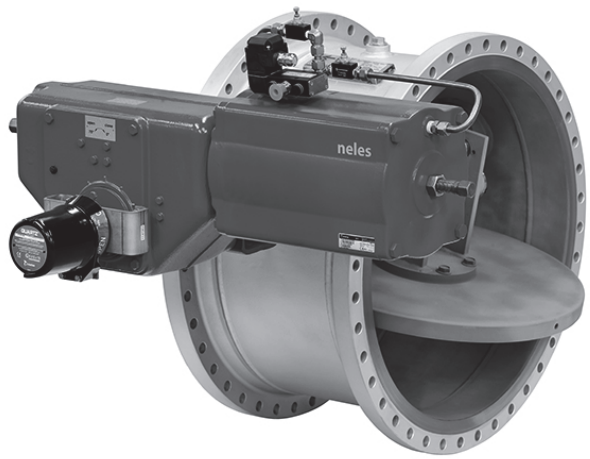
Neles™ 3-lever-valve
BH series

The Neles BH series is a 3-lever-valve utilized for safety and protection of air separation unit molecular sieve stations. Continuous advancement has allowed for an extended maintenance free operating time under moisture and corrosion conditions. The valve design allows the mechanical function to operate at small pressure differentials, protecting the molecular sieve.



FEATURES

- Proved design for moisture process conditions
- Drive shaft bearing protection as standard
- Short levers for small actuator sizes
- Standard pneumatic actuator
- Forged welding neck flange
- High flow rates
- Temperature range: -29 °C … +280 °C
- Soft- and metal seat available
- DIN/EN flange drilling available.

Body

The valve body material is carbon steel and available in flange design and in a wafer design depending on size. The flange valve bodies have forged flanges which are available with a ASME class 150, PN10 or PN16 drilling. The seat area is cladded with a stainless steel deposit welding to prevent corrosion.

Disc

The standard disc material is carbon steel designed with additional thickness to lessen the deforming caused by differential pressure and thus ensuring valve tightness. The seat area is cladded with a stainless steel deposit welding to prevent corrosion.

Shaft design

The BH 3-lever-valve is equipped with a one-piece shaft , made of high strength and corrosion resistant material. The shaft transmits the 90° turning with the main levers to the disc. As standard the shaft is equipped with a standard key way connection at one end for the actuator connection. The design enables the actuator position either on left or right side during assembly.

The shaft is symmetrically supported in rigid bearing houses, welded in the body. Self-lubricated bearing bushings are protected. This ensures a long maintenance free operating time even under difficult environmental conditions.

Low cost of ownership

- Simple and modular construction results in low number of needed spare parts in the inventory
- Extremely high cycle life minimizes the need of maintenance and increases Mean Time Between Failure (MTBF)
- Maintenance friendly design allows effective serviceability

Seat

The BH 3-lever-valve is equipped with a soft seat as standard. An optional metal seat can be provided.

Lever system

The lever system is constructed out of carbon steel. As an option the levers are available with an anti-corrosion coating. The hinge point bearings are equipped with maintenance free bronze bushings and stainless steel pins to ensure long life moving even under harsh conditions.

Actuator

The BH valve is equipped with a ISO 5211 mounting face to the actuator. Neles pneumatic actuators are used as standard. Positioners can be provided as required. The following table gives an overview for BH valves equipped with standard B1 actuators at the selected differential operating pressure.

DN	NPS	Differential pressure Δp = 0.15 bar	Differential pressure Δp = 0.22 bar	Differential pressure Δp = 0.3 bar
200	8"		B1CU6	
250	10"			
300	12"		B1CU9	
400	16"	B1CU9		B1CU11
500	20"		B1CU13	
600	24"	B1CU13		B1CU17
700	28"	B1CU17		B1CU25
800	32"	B1CU20		
900	36"			
1000	40"	B1CU25		B1CU32
1050	42"			
1100	44"			
1200	48"	B1CU32		B1CU40
1350	54"			
1400	56"			
1600	64"	B1CU40		B1CU50

Standard Neles actuators B1 @ selected dp

Technical specifications

Valve ratings

- Class 150 has a body rating of 16 bar
- Class 300 has a body rating of 40 bar
- PN ratings are according EN 1092

Sizes and end connections

- ASME cl. 150 are available in sizes 8" - 56"
- ASME cl. 300 as option on demand
- Flanges are designed as per ASME B16.5
- Flange drillings available
  - ASME B16.5: cl. 150, cl. 300
  - ASME B16.47 Series B cl.150, cl. 300
  - EN 1092: PN10, PN16; PN25, PN40

Face to face dimensions

- EN 558 part 1, basic series 14 for size ≥ NPS 20/DN 500;
- Special face-to-face for size NPS 8 - NPS 16 / DN 200 - DN 400 Wafer and double flange

Valve tightness

Soft seat

- EN 12266 Rate A

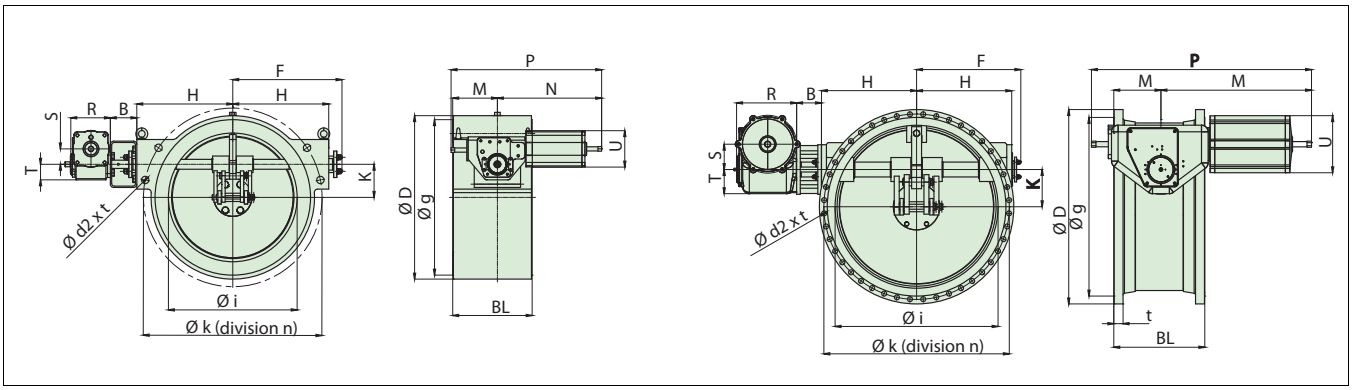
Metal seat

- EN 12266 3xRate B

Saftety features

- inherent mechanical safety function against wrong operation

Dimensions



	NPS	CL	STANDARD DIMENSIONS					FLANGE CONNECTION cl.150 - ASME B16.5							DIMENSIONS ACTUATOR MOUNTING							ACTUATOR	WEIGHTS [kg]		
			BL [mm]	H [mm]	F [mm]"	K [mm]	M [mm]	øk [mm]	ød2 [inch/mm]	n	øg [mm]	øD [mm]	øi [mm]	t [mm]	B [mm]	P [mm]	N [mm]	R [mm]	S [mm]	T [mm]	U [mm]	Type	Valve	Actuator	Valve+ Actuator
WAFER	8	150	200	165	205	70	105	298,5	3/4"-10UNC	8	269,9	270	210	30	80	395	270	138	36	46	90	B1CU6/20	90	5	95
	10	150	200	192,5	232,5	72	105	362	7/8"-9UNC	12	323,8	325	260	35	80	395	270	138	36	46	90	B1CU6/20	95	5	100
	12	150	240	230	270	80	125	431,8	7/8"-9UNC	12	381	375	310	35	80	450	315	140	43	50	110	B1CU9/25	160	10	170
	16	150	240	290	330	100	135	539,8	1"-8UN	16	469,9	494	389	40	80	450	315	140	43	50	110	B1CU9/25	210	10	220
DOUBLE FLANGE	20	150	350	350	390	120	173	635	32	20	584,2	700	500	43,3	120	640	445	190	65	65	175	B1C13/55	270	30	300
	24	150	390	390	430	140	201	749,3	35	20	692	815	600	49,7	120	785	555	222	78	70	215	B1CU17/55	350	55	405
			FLANGE CONNECTION cl.150 - ASME B16.47 SERIE B																						
	28	150	430	460	510	160	223	795,3	23	40	762	835	697	45	120	1075	725	304	121	110	265	B1CU25/95	455	130	585
	32	150	470	514,5	564,5	180	240	900,1	23	48	864	940	794	46,6	150	1075	725	304	121	110	265	B1CU25/95	550	130	680
	36	150	510	535	585	200	268	1009,6	26	44	972	1055	892	53	150	1370	920	379	153	146	395	B1CU32/105	775	255	1030
	40	150	550	580	630	225	285	1120,6	30	44	1080	1175	985	56	150	1370	920	379	153	146	395	B1CU32/105	800	255	1055
	48	150	630	697,5	747,5	260	333	1335	32	44	1289	1390	1185	65,6	200	1670	1150	449	194	185	505	B1CU40/120	1470	445	1915
	56	150	710	775	825	300	363	1543	32	60	1492	1600	1380	73,6	200	1670	1150	449	194	185	505	B1CU40/120	2200	445	2645
	64	150	790	935	985	260	442	1820	56	40	1750	1930	1596	102	200	2060	1390	541	242	195	610	B1CU50/120	3810	830	4640

	DN	PN	STANDARD DIMENSIONS					FLANGE CONNECTION PN10 - EN 1092							DIMENSIONS ACTUATOR MOUNTING							ACTUATOR	WEIGHTS [kg]		
			BL [mm]	H [mm]	F [mm]	K [mm]	M [mm]	øk [mm]	ød2 [inch/mm]	n	øg [mm]	øD [mm]	øi [mm]	t [mm]	B [mm]	P [mm]	N [mm]	R [mm]	S [mm]	T [mm]	U [mm]	Type	Valve	Actuator	Valve+ Actuator
WAFER	200	10	200	165	205	70	105	295	M20	8	268	270	210	30	80	395	270	138	36	46	90	B1CU6/20	90	5	95
	250	10	200	192,5	232,5	72	105	350	M20	12	324	325	260	30	80	395	270	138	36	46	90	B1CU6/20	95	5	100
	300	10	240	230	270	80	125	400	M20	12	370	375	310	30	80	450	315	140	43	50	110	B1CU9/25	160	10	170
	400	10	240	290	330	100	135	515	M24	16	482	485	389	35	80	450	315	140	43	50	110	B1CU9/25	210	10	220
DOUBLE FLANGE	500	10	350	350	390	120	173	620	26	20	585	670	500	43,3	120	640	445	190	65	65	175	B1C13/55	270	30	300
	600	10	390	390	430	140	201	725	30	20	685	780	600	49,7	120	785	555	222	78	70	215	B1CU17/55	350	55	405
	700	10	430	460	510	160	223	840	30	24	800	895	697	45	120	1075	725	304	121	110	265	B1CU25/95	455	130	585
	800	10	470	514,5	564,5	180	240	950	33	24	905	1015	794	46,6	150	1075	725	304	121	110	265	B1CU25/95	550	130	680
	900	10	510	535	585	200	268	1050	33	28	1005	1115	892	53	150	1370	920	379	153	146	395	B1CU32/105	775	255	1030
	1000	10	550	580	630	225	285	1160	36	28	1110	1230	985	56	150	1370	920	379	153	146	395	B1CU32/105	800	255	1055
	1200	10	630	697,5	747,5	260	333	1380	39	32	1330	1455	1185	65,6	200	1670	1150	449	194	185	505	B1CU40/120	1470	445	1915
	1400	10	710	775	825	300	363	1590	42	36	1535	1675	1380	73,6	200	1670	1150	449	194	185	505	B1CU40/120	2200	445	2645
	1600	10	790	935	985	260	442	1820	48	40	1750	1930	1596	102	200	2060	1390	541	242	195	610	B1CU50/120	3810	830	4640

	DN	PN	STANDARD DIMENSIONS					FLANGE CONNECTION PN16 - EN 1092							DIMENSIONS ACTUATOR MOUNTING							ACTUATOR	WEIGHTS [kg]		
			BL [mm]	H [mm]	F [mm]	K [mm]	M [mm]	øk [mm]	ød2 [inch/mm]	n	øg [mm]	øD [mm]	øi [mm]	t [mm]	B [mm]	P [mm]	N [mm]	R [mm]	S [mm]	T [mm]	U [mm]	Type	Valve	Actuator	Valve+ Actuator
WAFER	200	16	200	165	205	70	105	295	M20	12	268	270	210	30	80	395	270	138	36	46	90	B1CU6/20	90	5	95
	250	16	200	192,5	232,5	72	105	355	M24	12	320	325	260	35	80	395	270	138	36	46	90	B1CU6/20	95	5	100
	300	16	240	230	270	80	125	410	M24	12	378	375	310	35	80	450	315	140	43	50	110	B1CU9/25	160	10	170
	400	16	240	290	330	100	135	525	M27	16	490	494	389	40	80	450	315	140	43	50	110	B1CU9/25	210	10	220
DOUBLE FLANGE	500	16	350	350	390	120	173	650	33	20	610	715	500	43,3	120	640	445	190	65	65	175	B1C13/55	290	30	320
	600	16	390	390	430	140	201	770	36	20	725	840	600	49,7	120	785	555	222	78	70	215	B1CU17/55	375	55	430
	700	16	430	460	510	160	223	840	36	24	795	910	697	45	120	1075	725	304	121	110	265	B1CU25/95	490	130	620
	800	16	470	514,5	564,5	180	240	950	39	24	900	1025	794	46,6	150	1075	725	304	121	110	265	B1CU25/95	590	130	720
	900	16	510	535	585	200	268	1050	39	28	1000	1125	892	53	150	1370	920	379	153	146	395	B1CU32/105	830	255	1085
	1000	16	550	580	630	225	285	1170	42	28	1115	1255	985	56	150	1370	920	379	153	146	395	B1CU32/105	860	255	1115
	1200	16	630	697,5	747,5	260	333	1390	48	32	1330	1485	1185	65,6	200	1670	1150	449	194	185	505	B1CU40/120	1575	445	2020
	1400	16	710	775	825	300	363	1590	48	36	1530	1685	1380	73,6	200	1670	1150	449	194	185	505	B1CU40/120	2355	445	2800
	1600	16	790	935	985	260	442	1820	56	40	1750	1930	1596	102	200	2060	1390	541	242	195	610	B1CU50/120	3810	830	4640

	DN	PN	STANDARD DIMENSIONS					FLANGE CONNECTION PN40 - EN 1092							DIMENSIONS ACTUATOR MOUNTING							ACTUATOR	WEIGHTS [kg]		
			BL [mm]	H [mm]	F [mm]	K [mm]	M [mm]	øk [mm]	ød2 [inch/mm]	n	øg [mm]	øD [mm]	øi [mm]	t [mm]	B [mm]	P [mm]	N [mm]	R [mm]	S [mm]	T [mm]	U [mm]	Type	Valve	Actuator	Valve+ Actuator
WAFER	200	40	200	165	205	70	105	320	M27	12	285	290	210	40	80	395	270	138	36	46	90	B1CU6/20	90	5	95
	250	40	200	192,5	232,5	72	105	385	M30	12	345	352	260	45	80	395	270	138	36	46	90	B1CU6/20	95	5	100
	300	40	240	230	270	80	125	450	M30	16	410	417	310	45	80	450	315	140	43	50	110	B1CU9/25	160	10	170
	400	40	240	290	330	100	135	585	M36	16	535	546	389	54	80	450	315	140	43	50	110	B1CU9/25	210	10	220
DF	500	40	350	350	390	120	173	615	42	20	610	755	500	57	120	640	445	190	65	65	175	B1C13/55	350	30	380
	600	40	508	390	430	140	201	735	48	20	725	890	600	72	120	785	555	222	78	70	215	B1CU17/55	700	55	505
	700	40	610	460	510	160	223	900	48	24	840	995	700	90	120	785	555	222	78	70	215	B1CU25/95	980	130	1110

How to order

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
-	BH	A	C	48	N	G	B1	-	-
BH with max. opening 0,3 bar pressure difference, drillings acc. to CL 150 pressure class, size NPS 48, carbon steel body, carbon steel disc, corrosion protected lever, soft seated with PTFE packing.									
	BH	A	J	400	N	G	B1	K	-
BH with max. opening 0,3 bar pressure difference, drillings acc. to PN 10 pressure class, size DN 400, carbon steel body, stainless steel disc, stainless steel lever, soft seated with PTFE packing, both side shaft end with key for spare valve.									

1. sign	RESERVED FOR FUTURE USE
-	

2. sign	PRODUCT SERIES / DESIGN
BH	3-lever valve with precise controlled max opening dp. and face-to-face according to EN 558 part 1, basic series 14 for size ≥ NPS 20/DN 500; Special face-to-face for size NPS 8 - NPS 16 / DN 200 - DN 400

3. sign	PRODUCT MAX OPENING PRESSURE DIFFERENCE FOR ACTUATOR
A	dp_{max}= 0,3 bar
B	dp_{max}= 0,15 bar
Y	Special (always check the availability from the factory)

4. sign	PRESSURE RATING AND CONSTRUCTION
C	Body design 16 bar, trim 7,5 bar, body drilling ASME class #150
D	Body design 40 bar, trim 30 bar, body drilling ASME class #300
J	Body design 10 bar, trim 7,5 bar, body drilling acc. EN 1092-1 PN10
K	Body design 16 bar, trim 7,5 bar, body drilling acc. EN 1092-1 PN16
L	Body design 25 bar, trim 12 bar, body drilling acc. EN 1092-1 PN25
M	Body design 40 bar, trim 30 bar, body drilling acc. EN 1092-1 PN40

5. sign	SIZE RANGE (DN or Inch) & BODY DESIGN
	DN 200, 250, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600 NPS 08, 10, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 54, 56, 64 Size ≤ DN400 / NPS 16 body design always wafer size ≥ DN500 / NPS 20 body design always double flanged

6. sign	BODY AND DISC DESIGN
N	Neo Design: Corrosion protected lever system. Body: EN 1.0460 / 1.0425 / 1.0570 (flange / body / neck) Disc: EN 1.0570 or equal - for lever valve ≤ DN400 / NPS 16 = stainless steel disc

7. sign	LEVER DESIGN
A	Carbon steel with primer Corrosion protected moving parts (screws, nuts, pins, etc.) Inserted heavy duty bronze lever bearings Only for ≥ DN500 / NPS 20
G	With corrosion protection ≤ DN400 / NPS 16 = Stainless steel ≥ DN500 / NPS 20 = Carbon steel with corrosion protection (GEOMET) Corrosion protected moving parts (screws, nuts, pins, etc.) Inserted heavy duty bronze lever bearings
C1	For ≥ DN500 / NPS 20 = Stainless steel Corrosion protected moving parts (screws, nuts, pins, etc.) Inserted heavy duty bronze lever bearings

8. sign	SEAT, GLAND PACKING AND SHAFT DESIGN
B1	Soft seated / FKM. Tmax 200°C Live loaded gland packing PTFE Bronze-PTFE composite bearings Bearing protection Shaft material 1.4021
C1	Metal seated. Tmax 280°C Live loaded gland packing PTFE Bronze-PTFE bearings Bearing protection Shaft material 1.4021
Y	Special, to be specified

9 sign	SHAFT DESIGN
-	Key at one side (Standard)
K	Both side shaft end with key (only for spare lever valves)
M	Both side shaft end with square end profile (only for spare lever valves)

10. sign	FLANGE FACING
-	Raised Face, Ra 3.2 - 6.3, standard EN 1092-1 Type B1 (all sizes) ASME B16.5 (sizes up to NPS 24) ASME B16.47 Series B (sizes larger than NPS 24)
Y	Special, to be specified

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