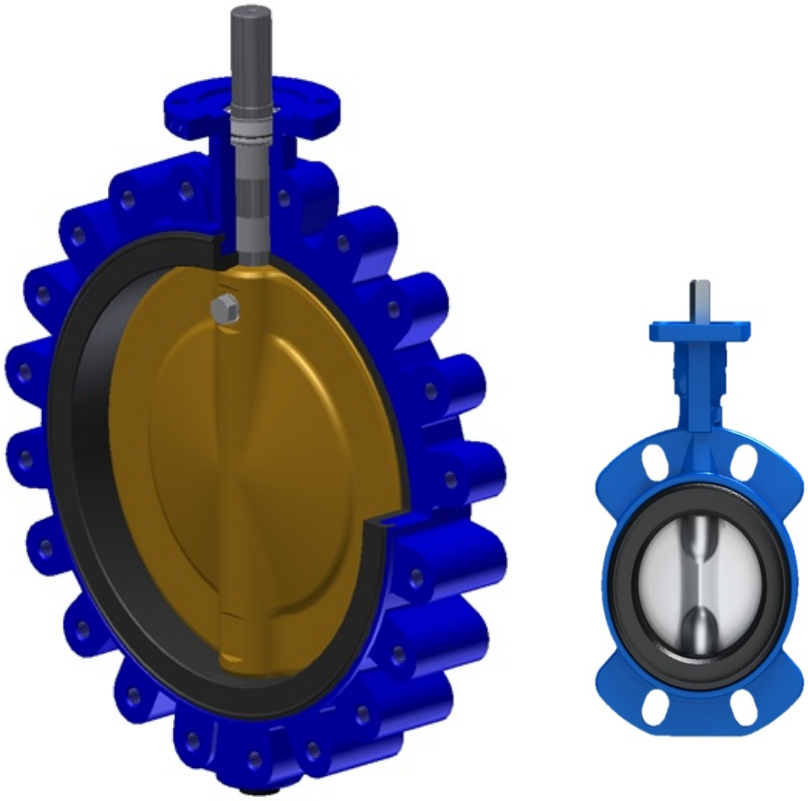
PHBB Series MR resilient seated butterfly valve for general purpose applications.

Features

- Wafer and lugged body design with face-to-face dimension, according to EN 558 Series 20 and API 609.
- Designed according to EN 593 and API 609.
- The seat is field replaceable and fully isolates the body and shaft from the flow.
- Primary shaft sealing exceeds the pressure rating of the valve and prevents leakage through shaft area to atmosphere.
- A secondary shaft sealing provides back-up safety.
- A molded-in O-ring in the seat for flange sealing eliminates the need for gaskets.
- Shaft seals prevent moisture penetrating into the shaft area.
- The two piece shaft allows for a thin disc and provides minimal obstruction to flow (up to DN 300).
- Rounded polished disc edge gives full concentric sealing, lower torques, longer seat life and drop-tight shut-off.
- Body locating holes allow ease of installation and centering between the flanges.
- Extended body neck allows for pipe insulation.
- Top and bottom shaft bearings for optimized support and minimum friction and decreased torque.
- Top bushing absorbs actuator side thrust loads.



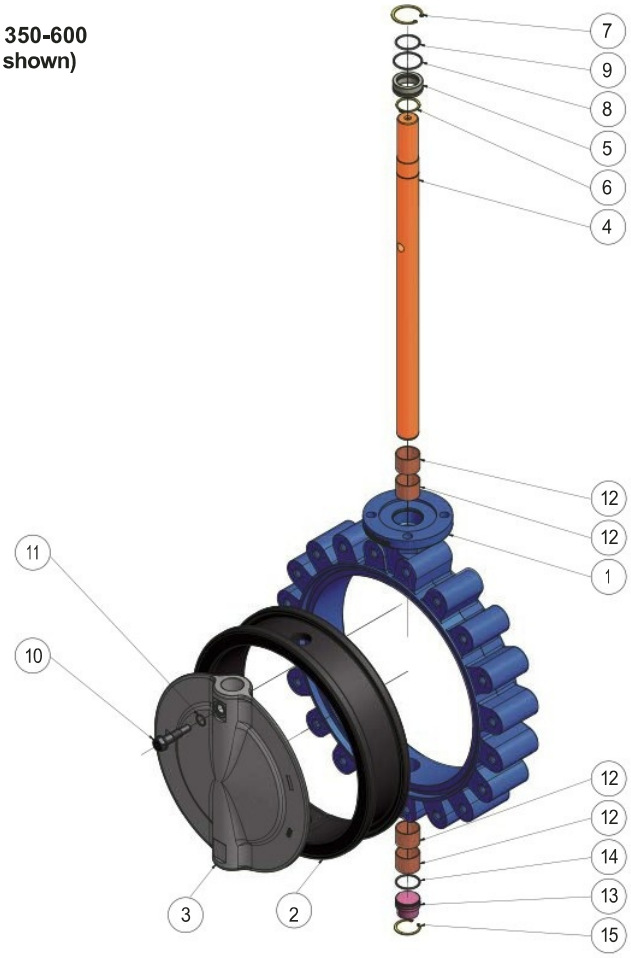
Water, air, dry bulk conveying etc. These valves are for any service where a drop-tight shut-off with maximum flow area is required.

Pressure (bar)	: 16 bar DN 50-300 10 bar DN 350-600
End of line (bar)	: 10 bar DN 50-300 6 bar DN 350-600
Vacuum service (bar)	: 0.4 bar
Temperature (°C)	: -40 to +160
Sizes (DN)	: 50-600
Flange accommodation	: PN 6/10/16 ASME 125/150 JIS 10K BS Table E

Series MRW/MRL
DN 50-300
(MRW shown)

Parts list		
Item	**Qty**	**Description**
1	1	Body
2	1	Seat
3	1	Disc
4	1	Upper shaft
5	1	Lower shaft
6	1	Upper bushing
7	1	Packing
8	1	Body circlip
9	1	Shaft circlip
10	2	Upper and lower bearing
11	1	Plug

DN 350-600
(MRL shown)



Parts list		
Item	**Qty**	**Description**
1	1	Body
2	1	Seat
3	1	Disc
4	1	Shaft
5	1	Bushing
6	1	Shaft circlip
7	1	Body circlip
8	1	Body O-ring
9	1	Shaft O-ring
10	1	Disc screw
11	1	Disc screw O-ring
12	4	Upper and lower bearing
13	1	Plug
14	1	Plug O-ring
15	1	Plug circlip

Material specification

DN 50-300

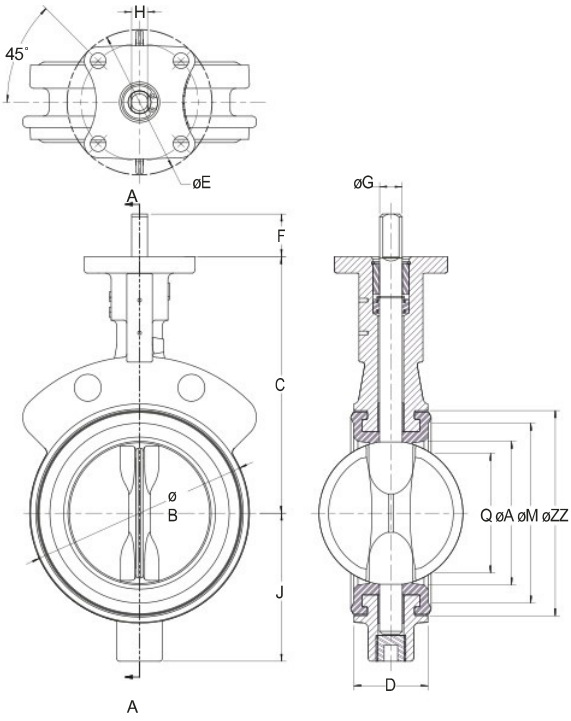
Part name	Material	Material specification	Remark
Body	Ductile iron	IS 1865 Gr.500/7, ASTM A536 Gr 65-45-12	
Disc	Duplex/Super duplex	ASTM A890 Gr 4A or 5A	
	316 stainless steel	ASTM A351 Gr CF8M	
	304 stainless steel	ASTM A351 Gr CF8	
	Aluminium bronze	ASTM B148 UNS C95200	
	Nickel aluminium bronze	ASTM B148 UNS C95800	
	Ductile iron + CTD	IS 1865 Gr.500/7,ASTM A536 Gr 65-45-12	CTD = Nickel plating
Shaft	316 stainless steel	ASTM A276 Gr 316	
	431 stainless steel	ASTM A276 Gr 431	
	Super duplex	ASTM A276 UNS S32750	
Seat	EPDM		
	NBR		
	White NBR		
	FKM		
Bushing	Polyester		
Packing	NBR		
Bearing	PTFE/steel		
Circlip	Stainless steel		
Plug	Carbon steel		

DN 350-600

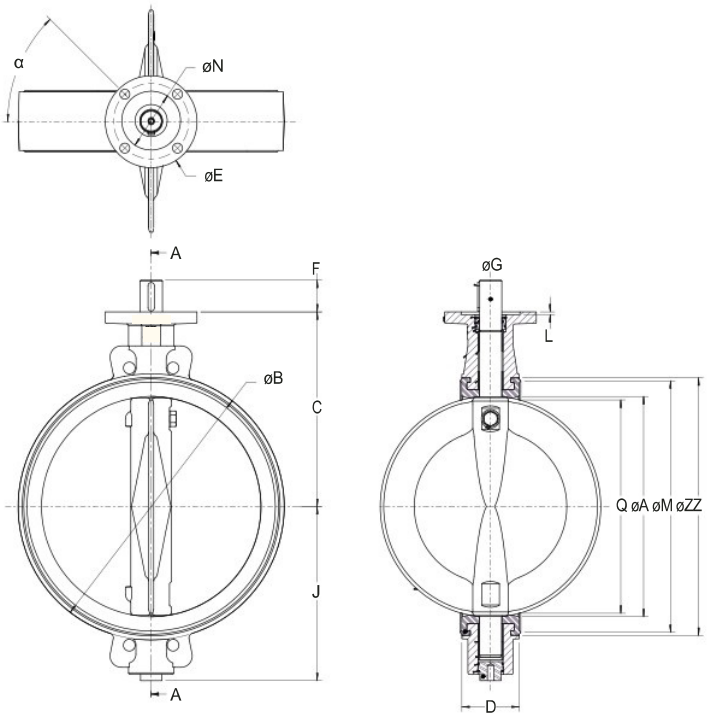
Body	Ductile iron	IS 1865 Gr.500/7,ASTM A536 Gr 65-45-12	
Disc	Super duplex	ASTM A890 Gr 5A	
	Duplex	ASTM A890 Gr 4A	
	316 stainless steel	ASTM A351 Gr CF8M	
	304 stainless steel	ASTM A351 Gr CF8	
	Aluminium bronze	ASTM B148 UNS C95200	
	Nickel aluminium bronze	ASTM B148 UNS C95800	
	Ductile iron +CTD	IS 1865 Gr.500/7, ASTM A536 Gr 65-45-12	CTD = Epoxy coated, max. temp. 120°C
Shaft	431 stainless steel	ASTM A276 Gr 431 S43100	
	Duplex	ASTM A276 UNS S31803	
	Super duplex	ASTM A276 UNS S32750	
Seat	EPDM		
	NBR		
	FKM		
Disc screw	Super duplex	ASTM A276 UNS S32750	
	Duplex	ASTM A276 UNS S31803	
Disc screw O-ring	EPDM		
	NBR		
	FKM		
Plug	Carbon steel		
Plug O-ring	NBR		
Plug circlip	Stainless steel		
Bushing	Polyester		
Shaft/Body O-ring	NBR		
Bearing	PTFE/steel		
Shaft/Body circlip	Stainless steel		

Note:
Valves with super duplex disc will have super duplex disc screw. All other discs will have a duplex disc screw.

Series MRW (Wafer)
DN 50-300



DN 350-600



Valve dimensions (mm)

Size													Shaft			Top plate drilling				Weight (3)
(DN)	A	B	C	D	E	F	J	L	M	N	Q (1)	ZZ	G	H (2)	Key	Bolt circle	No. holes	α	Hole dia.	(kg)
50	50	91	135	43	100	25	60	-	66	-	28	80	15.88	11.11	-	82.5	4	45°	11	2.0
65	62	105	150	46	100	30	76	-	78	-	43	93	14.29	9.53	-	82.5	4	45°	11	2.7
80	77	123	160	46	100	30	82	-	97	-	65	112	14.29	9.53	-	82.5	4	45°	11	3.2
100	99	154	180	52	100	30	104	-	129	-	87	144	15.88	11.11	-	82.5	4	45°	11	4.3
125	124	187	195	56	100	30	120	-	160	-	113	175	19.05	12.7	-	82.5	4	45°	11	5.9
150	150	208	210	56	100	30	131	-	181	-	142	196	19.05	12.7	-	82.5	4	45°	11	6.8
200	195	265	240	60	150	32	162	-	233	-	188	248	22.23	15.88	-	127	4	45°	13.5	11.8
250	245	320	275	68	150	50	198	-	290	-	237	305	28.58	-	6.4 x 6.4	127	4	45°	13.5	19.1
300	291	372	310	78	150	50	230	-	340	-	283	355	28.58	-	6.4 x 6.4	127	4	45°	13.5	26.8
350	325	416	325	78	150	76	260	-	378	-	318	398	35	-	8 x 8	127	4	45°	13.5	40
400	380	474	360	102	150	76	298	-	435	-	368	455	35	-	8 x 8	127	4	45°	13.5	61
450	434	534	395	114	200	76	334	6	495	130	421	515	41.35	-	9.5 x 9.5	165	4	45°	22	86
500	486	589	430	127	200	108	385	6	549	130	471	569	47.6	-	12.7 x 9.5	165	4	45°	22	106
600	585	691	500	154	200	108	456	6	650	130	568	670	47.6	-	12.7 x 9.5	165	4	45°	22	158

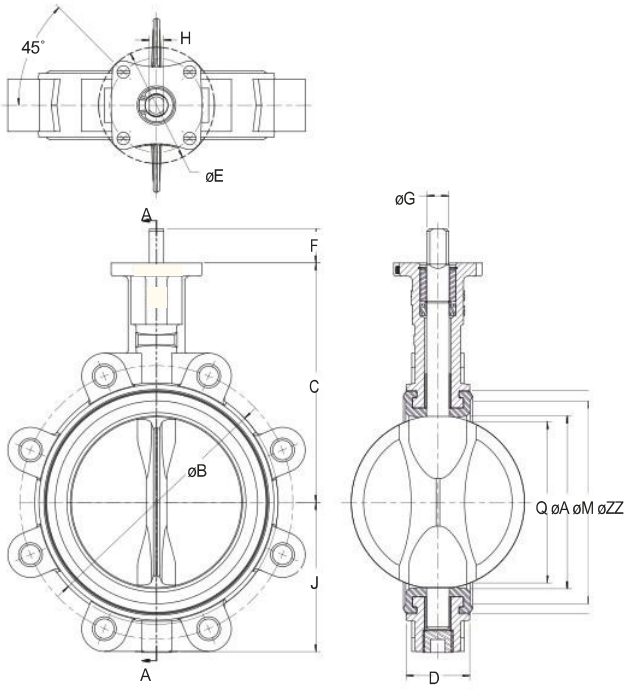
Notes:

(1) 'Q' dimension is the minimum allowable pipe or flange inside diameter at the centered body face to protect the disc sealing edge against damage when opening the valve.

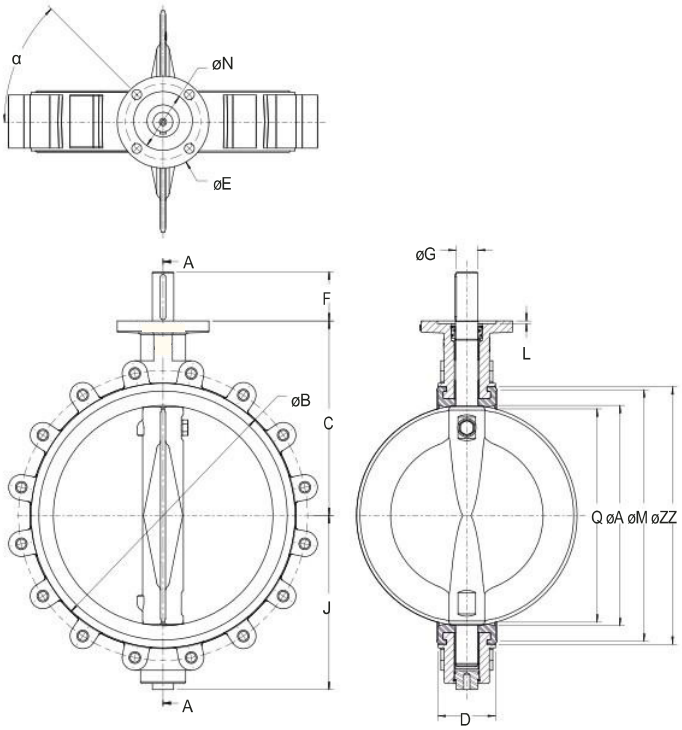
(2) 'H' dimension refers to flat on shaft.

(3) Weight may vary depending on trim materials used.

Series MRL (Lug)
DN 50-300



DN 350-600



Valve dimensions (mm)

Size													Shaft			Top plate drilling				Weight (3)
(DN)	A	B	C	D	E	F	J	L	M	N	Q (1)	ZZ	G	H (2)	Key	Bolt circle	No. holes	α	Hole dia.	(kg)
50	50	92	135	43	100	25	60	-	66	-	28	80	15.88	11.11	-	82.5	4	45°	11	3.1
65	62	105	150	46	100	30	76	-	78	-	43	93	14.29	9.53	-	82.5	4	45°	11	4.1
80	77	126	160	46	100	30	82	-	97	-	65	112	14.29	9.53	-	82.5	4	45°	11	4.6
100	99	156	180	52	100	30	104	-	129	-	87	144	15.88	11.11	-	82.5	4	45°	11	7.1
125	124	190	195	56	100	30	120	-	160	-	113	175	19.05	12.7	-	82.5	4	45°	11	10.2
150	150	214	210	56	100	30	131	-	181	-	142	196	19.05	12.7	-	82.5	4	45°	11	11.2
200	195	268	240	60	150	32	162	-	233	-	188	248	22.23	15.88	-	127	4	45°	13.5	17.2
250	245	321	275	68	150	50	198	-	290	-	237	305	28.58	-	6.4 x 6.4	127	4	45°	13.5	29.5
300	291	375	310	78	150	50	230	-	340	-	283	355	28.58	-	6.4 x 6.4	127	4	45°	13.5	41.5
350	325	416	325	78	150	76	260	-	378	-	318	398	35	-	8 x 8	127	4	45°	13.5	52.5
400	380	474	360	102	150	76	298	-	435	-	368	455	35	-	8 x 8	127	4	45°	13.5	89
450	434	534	395	114	200	76	334	6	495	130	421	515	41.35	-	9.5 x 9.5	165	4	45°	22	108
500	486	589	430	127	200	108	385	6	549	130	471	569	47.6	-	12.7 x 9.5	165	4	45°	22	162
600	585	691	500	154	200	108	456	6	650	130	568	670	47.6	-	12.7 x 9.5	165	4	45°	22	237

Notes:

(1) 'Q' dimension is the minimum allowable pipe or flange inside diameter at the centered body face to protect the disc sealing edge against damage when opening the valve.

(2) 'H' dimension refers to flat on shaft.

(3) Weight may vary depending on trim materials used.

Torque application factor categories

Application-A
Clean liquid lubricating media (water, clean oils, lube oil, mineral oil, etc.); and with no deposit or chemical attack, valve operated at least once a week.
Temperature range from 0°C to maximum temperature rating of the elastomer seat.

Application-B
Other liquid media and lubricating gases (aqueous liquids, such as food & beverage, water, etc.); and with minor deposit or chemical attack, valve operated at least once a month.
Temperature range from 0°C to maximum temperature rating of the elastomer seat.

Application-C
a. Dry non-abrasive media or gases (non-abrasive powders and dry gas); or
b. Fluids with moderate deposit or chemical attack; or
c. Valves operated less than once a month.
Temperature range from 0°C to maximum temperature rating of the elastomer seat.

Application-D
a. Dry abrasive media and degreasing applications (sand, cement, silicone free, oxygen cleaned); or
b. Liquids with severe deposit; or
c. Valves not frequently operated (once a year).
All above with temperature range from -10°C to maximum temperature rating of the elastomer seat.

Notes:
1. For applications with temperatures above or below the guidelines above, please consult factory.
2. For dry service valves it is suggested to use U/C discs (reduced diameter) when service conditions are less than 3.5 bar.

Valve seating and unseating torques (Nm)

Differential pressure (bar)	Valve size (DN) 50	65	80	100	125	150	200	250	300	350	400	450	500	600
Application-A														
3,5	12	20	25	38	59	82	149	242	346	468	640	846	1090	1701
7	12	20	26	39	64	89	165	272	388	521	720	961	1250	1980
10	13	22	29	45	71	98	189	316	450	596	831	1125	1475	2375
14	14	24	32	50	81	114	220	375	535					
16	14	25	35	52	86	121	236	402	575					
Application-B														
3,5	13	22	30	43	67	94	170	275	390	529	719	946	1215	1875
7	13	22	32	46	72	101	186	302	433	581	795	1060	1370	2155
10	15	24	35	48	79	112	209	346	499	653	905	1215	1591	2545
14	15	27	37	55	89	126	240	405	582					
16	16	28	39	57	94	133	256	435	625					
Application-C														
3,5	14	22	33	49	75	104	191	305	438	589	796	1046	1337	2054
7	15	25	35	51	78	113	205	335	480	640	875	1155	1492	2327
10	15	27	37	55	87	123	230	381	545	710	982	1315	1710	2715
14	15	28	41	60	97	137	262	438	630					
16	17	29	42	62	100	144	275	469	670					
Application-D														
3,5	16	27	38	56	87	123	220	356	508	680	916	1194	1525	2325
7	17	28	40	59	92	130	235	385	550	729	991	1305	1672	2590
10	17	30	42	63	98	141	261	429	616	796	1095	1455	1885	2965
14	18	31	46	68	109	155	290	488	701					
16	19	32	47	70	114	162	305	515	743					

Maximum allowable shaft torques (Nm)

Shaft material	Valve size (DN) 50	65	80	100	125	150	200	250	300	350	400	450	500	600
316SS	65	110	110	160	260	260	380	762	762					
431SS	90	155	155	230	365	365	650	1307	1307	1542	1824	2977	3219	5086
Duplex										1156	1368	2233	2414	3815
Super duplex	85	142	142	210	340	340	600	1200	1200	1413	1672	2729	2951	4366

Flowrate co-efficients - K VV alues

Valve size (DN)	Disc opening (degrees) 10°	20°	30°	40°	50°	60°	70°	80°	90°
50	0	0.8	47	13	31	46	71	98	107
65	0	2.3	12	26	51	79	124	173	216
80	0	6.1	27	56	92	142	216	305	410
100	0	13	56	110	178	266	408	602	810
125	0	27	86	157	250	388	635	965	1250
150	8	50	131	225	365	575	985	1550	1945
200	21	114	230	406	645	1025	1775	2909	3515
250	35	175	340	640	980	1545	2675	4450	5810
300	50	252	496	934	1431	2256	3910	6715	8915
350	120	305	638	1140	1935	3111	5011	8970	10405
400	156	398	830	1490	2526	4063	6545	11710	13590
450	195	504	1050	1890	3201	5140	8287	14825	17202
500	240	620	1300	2330	3950	6345	10225	18302	21239
600	350	895	1870	3355	5690	9141	14725	26355	30585

Note:
K_V= The volume of water in m_3/hr that will pass through a valve with a pressure drop of 1 bar at 20°C.

Pressure-temperature diagram

Seat material *	Disc material	Body material	Size range (DN)	Valve function Standard / End of Line	Temperature (°C) -28	-20	-15	0	50	100	120	130	150	160
EPDM	all	DI	50-300	Std / EOL			16 bar / 10 bar							
NBR and white NBR	all	DI	50-300	Std / EOL			16 bar / 10 bar							
FKM	all	DI	50-300	Std / EOL			16 bar / 10 bar					10 bar / 6 bar		
EPDM	all	DI	350-600	Std / EOL			10 bar / 6 bar							
NBR	all	DI	350-600	Std / EOL			10 bar / 6 bar							
FKM	all	DI	350-600	Std / EOL			10 bar / 6 bar					6 bar / 4 bar		

Notes:
* all seat materials drop tight

Contact Details :
Email : contact@phbbvalves.com
Tel +91 90280 96017