

DOUBLE ISOLATION & BLEED VALVES (DIB-1 & -2)

Solutions of KLINGER SCHÖNEBERG

Double Isolation & Bleed Valves (DIB)

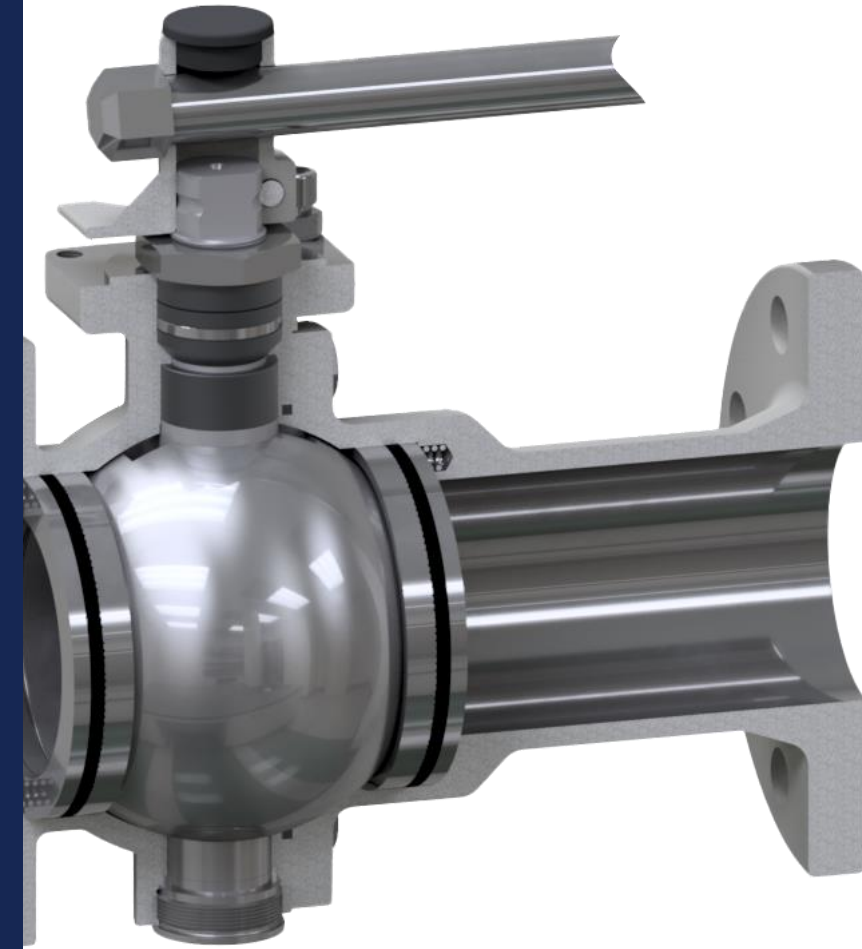
Overview



In accordance to the API 6D Section 3.1.16 the API defines a Double Isolation & Bleed Valve (DIB) as “a valve with two or more seating surfaces, each of which, in the closed position, provide a seal against pressure from a single source, with a means of venting/bleeding the cavity between the seating surfaces. This feature can be provided in one direction or in both directions.”

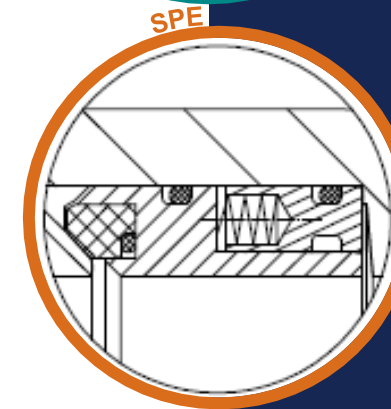
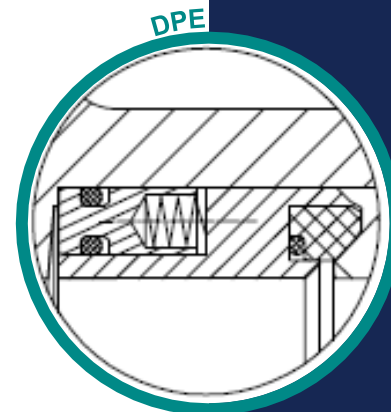
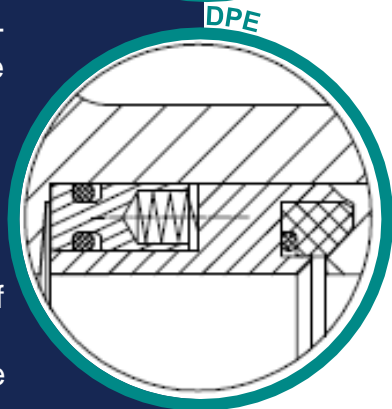
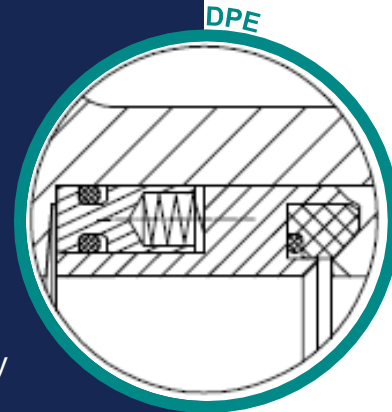
Two configurations are available for DIB ball valves:

- The **DIB-1** configuration features bi-directional seats upstream and downstream. DIB-1 ball valves have double piston effect (DPE) seats both upstream and downstream to provide a seal in both directions. Over pressurization of the cavity is avoided by the use of an external relief valve. With the ball in the closed position and pressure on the upstream side, the cavity pressure will increase in case of upstream seat failure. The cavity pressure will cause a double piston effect on the downstream seat creating a second seal on the ball.
- The **DIB-2** ball valve design features one bidirectional (DPE) seat and one uni-directional single piston effect seat (SPE). For the DIB-2 configuration, one seat SPE and the other DPE, cavity over-pressurization is internally controlled within the line. If the upstream seat leaks, then there is automatic cavity pressure relief on the upstream side and the downstream seat will provide isolation due to double piston effect.



DIB-1

- Two seats with double piston effect (DPE)
- Bi-directional usage
- Each seat can isolate the fluid from upstream and downstream.
- If one seat is leaking, the other seat still work to ensure the sealing performance
- If the seat at the upstream side has a failure (leakage) leaking in closed position of the ball and consequently the cavity space fills with the pressurized medium, the seat at the downstream side ensures tightness in the downstream direction. The pressure in the cavity space reaches the space between the spring room and the ball seat retainer ring at the outlet-side seat, supporting the contact pressure of the seat on the ball, while a ball seat back seal prevents the medium from passing by the seat on the outside. The ball seat seal is realized by means of an O-ring.
- To avoid over pressurization (e.g. rapidly expanding media such as ammonia, EO, etc.) of the cavity, there is an external vent/bleed outlet with the possibility to install an external pressure relief valve.



DIB-2

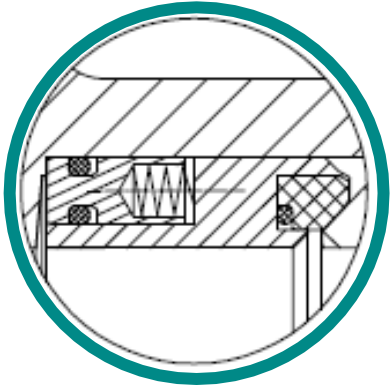
- One uni-directional seat with single piston effect (SPE) and one bi-directional seat with double piston effect (DPE)
- Uni-directional usage
- If the SPE seat on upstream side has a failure (leakage) in closed position, the downstream seat will provide isolation to downstream side due to its double piston effect (DPE).
- In case of cavity over-pressurization there is automatic cavity pressure relief on the upstream side by pushing back the SPE seat.
- The Installation of an external vent/bleed outlet with the possibility to install an external pressure relief valve is important for maintenance and integrity check situations where leakage can be monitored.

KLINGER SCHÖNEBERG Example

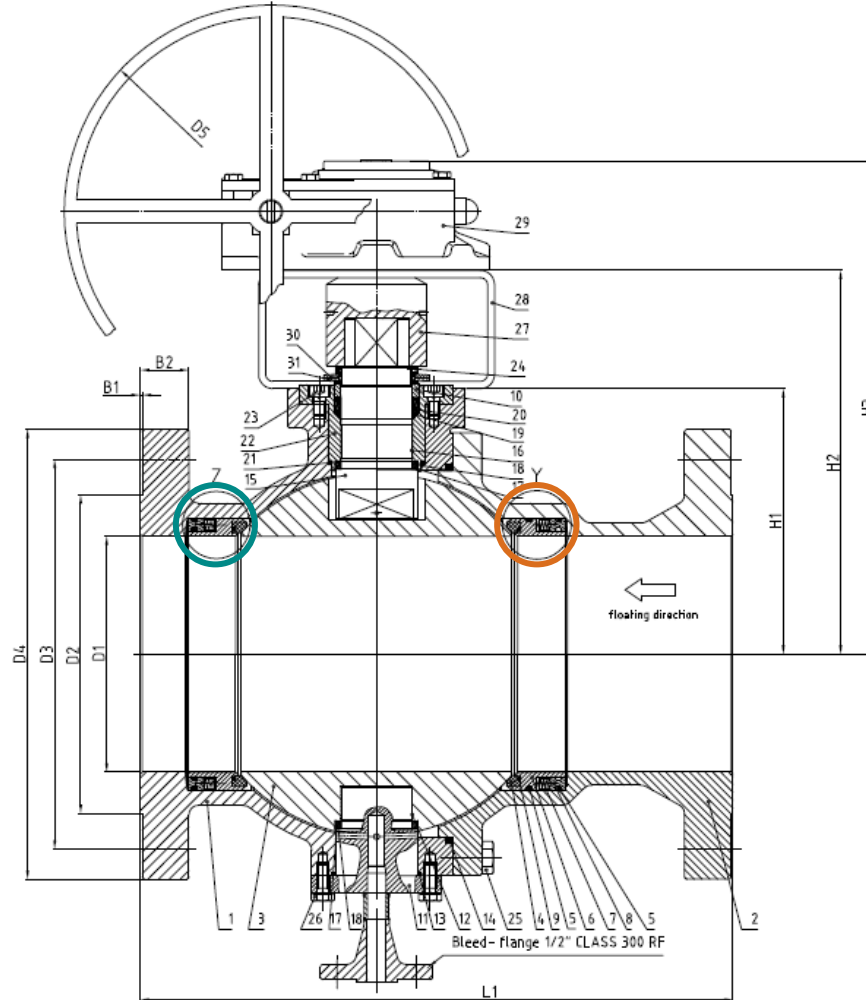
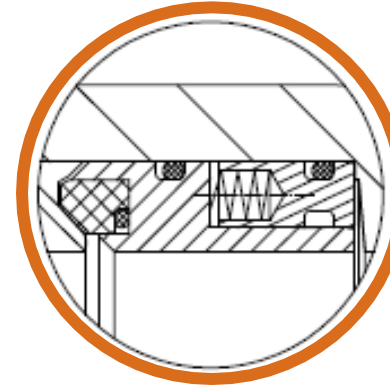
DIB-2 Valve – INTEC K214



Downstream
Double Piston Effect (DPE)



Upstream
Single Piston Effect (SPE)



31	disk spring thrust collar	AISI 316Ti
30	disk spring	A479 UNS S31803
29	Gearbox	Mastergear
28	console	steel galv.
27	couple	AISI 303
26	hex. screw	SS 316
25	hex. screw	SS 316
24	hex. nut	SS 304
23	socket screw	SS 316
22	stuffing box	SS 316Ti
21	stuffing box seal	KF
20	upper cone ring	Graphite
19	upper seal	KFAM
18	below cone ring	Graphite
17	below seal	KFGN
16	below bearing	SS 316/KF
15	stem	A479 UNS S31803
14	body seal	KF
13	trunnion seal	KF
12	trunnion bearing	SS 316 /KF
11	trunnion	SS 316Ti
10	bearing	PEEK
9	seat O-Ring	Viton
8	spring thrust collar	AISI 316Ti
7	spiral spring	AISI 316
6	seat thrust collar	AISI 316Ti
5	O-Ring	Viton
4	seat	PEEK
3	ball	A351-CF8M
2	cap	A352-LCB
1	body	A352-LCB
Pos.	Part	Material

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