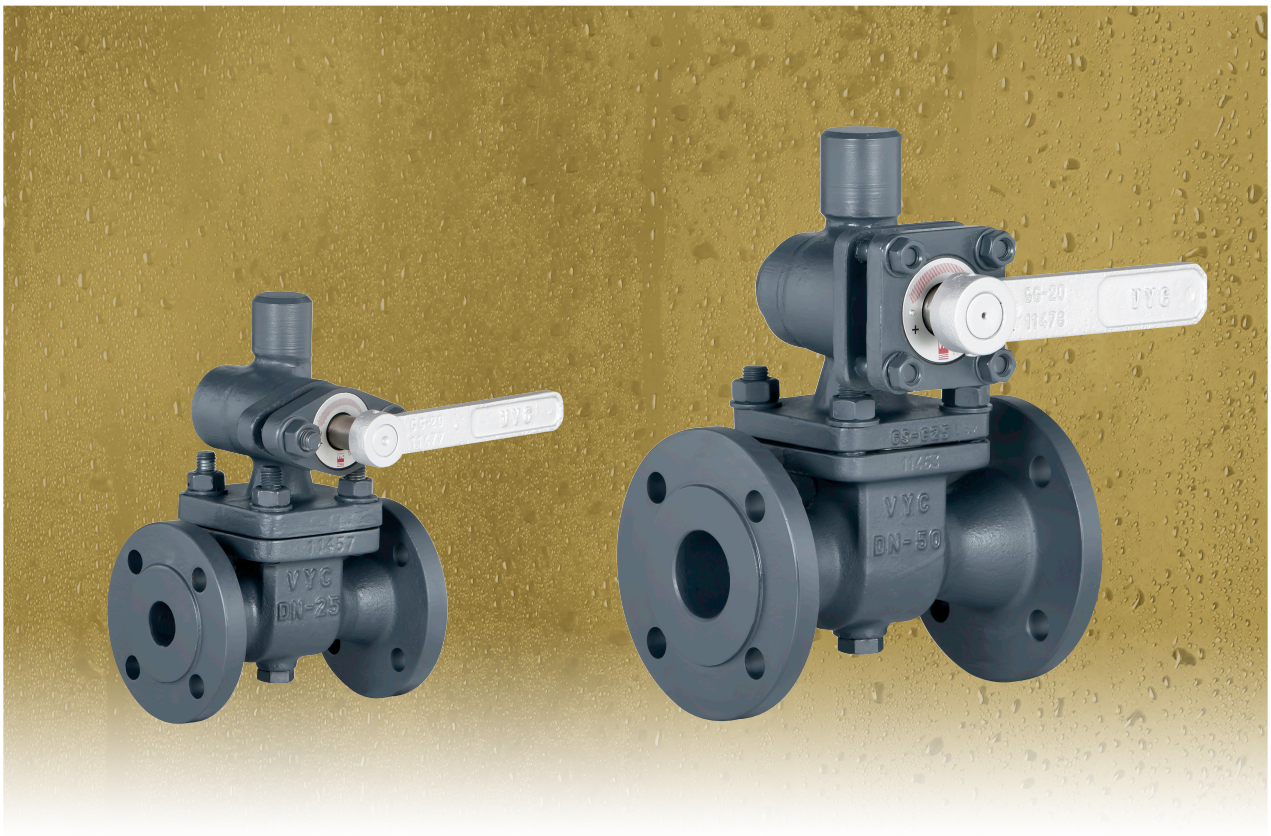
Blowdown valve for bleeding dirt and sludge

For steam boilers **Model 460**

EN ASME/ANSI



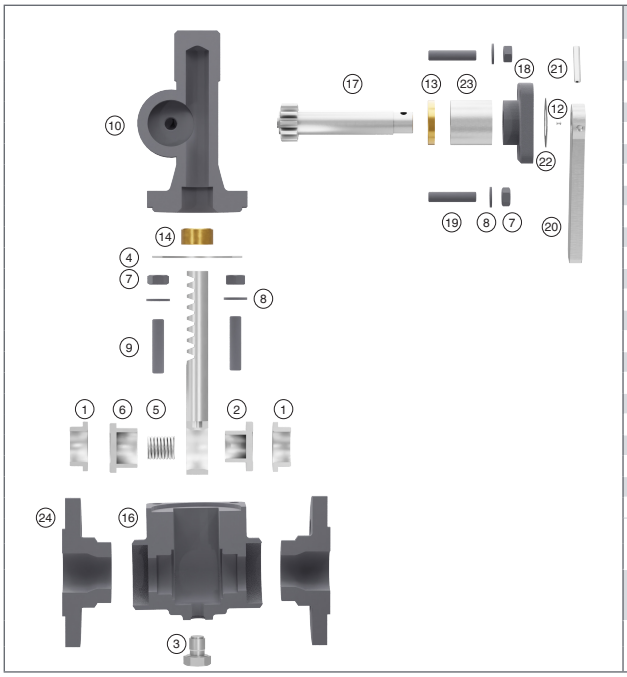
The water in the boiler contains salts, which are built up by the continuous evaporation. If these salts are not eliminated, bubbles and foam are formed when the density of the water increased.

To prevent these lime deposits forming, the water supply must be suitably treated, with the result that certain salts are changed producing impurities which form sludge and encrusted deposits which then adhere to the sides or the bottom of the boiler and to the combustion tubes, together with particles of dirt, remains of electrodes, carbonic acid, oxygen, etc. This leads to a high level of rust which may:

- Destroy the metal plate of the boiler, causing high maintenance costs.
- Produce thermic voltages, causing cracks in the metal plate and soldering cord.
- Notably slow down thermic transmission, meaning an unnecessary and excessive consumption of fuel.

Specifications

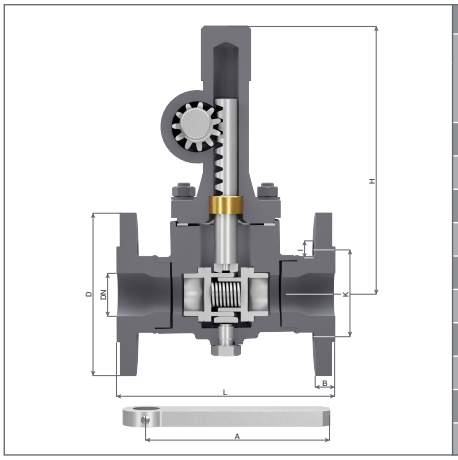
— A the draining section is opened quickly and completely by driving the lever from right to left. The deposits, collected at the bottom of the boiler, are disturbed and sucked up by the sudden air intake which carries them out.
— Direct emptying passage, meaning a high volume and low level of load loss.
— Rotating the lever from left to right causes instant closing, preventing irrevocable losses of water and pressure.
— Seatings and stoppers treated and balanced ensuring a level of tightness higher than that required by EN 12266-1.
— Equipped with a screw for the drainage of the sedimentations.
— Simplicity of design ensures good performance.



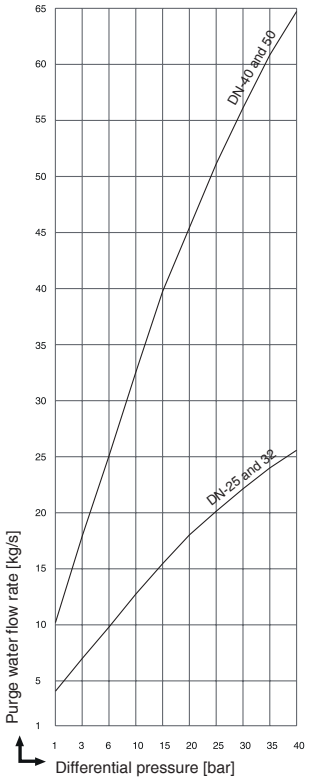
N°. PIECE	PIECE	MATERIAL
1	Seating	S. steel (EN-1.4028)
2,6	Plug	S. steel (EN-1.4028)
3	Cap	Carb. steel (EN-1.1191)
4	Coupling	Graphite
5	Spring	S. steel (EN-1.4310)
7	Nut	Carb. steel (EN-1.1141)
8	Washer	Carb. steel (EN-1.1141)
9,19	Stud	Carb. steel (EN-1.1181)
10	Cover	Nodular iron (EN-5.3106)
11	Rack	S. steel (EN-1.4305)
12	Rivets	Carb. steel (EN-1.1141)
13	Gland disc	Bronze (EN-CC491K-GZ)
14	Valve base	Bronze (EN-CC491K-GC)
16	Body	Cast steel (EN-1.0619)
17	Axis with pinion	S. steel (EN-1.4305)
18	Gland	Nodular iron (EN-5.3106)
20	Lever	Carb. steel (EN-1.0037 St-37.2)
21	Elastic gudgeon	Carb. steel (EN-1.1231)
22	Gauge plate	Aluminium
23	Seal	Graphite
24	Flange	Carb. steel (EN-1.0460)
DN		25 to 50 (EN, ANSI)
PN		40

OPERATING CONDITIONS PN-40 EN 1092-1	PRESSURE IN bar	40	37,1	33,3	30,4
	MAXIMUM TEMP. IN °C	RT	100	200	250
OPERATING CONDITIONS 150# ASME B16.5	PRESSURE IN bar	19,2	17,7	13,8	12,1
	MAXIMUM TEMP. IN °C	50	100	200	250
OPERATING CONDITIONS 300# ASME B16.5	PRESSURE IN bar	40	37,4	33,6	30,7
	MAXIMUM TEMP. IN °C	50	100	200	250

RT: Room teperature (-10°C to 50°C)



DN	25		32		40		50	
CONNECTIONS	I- Flange PN-40 EN-1092-1							
	II - Flange class 300 lbs ASME/ANSI B 16.5							
	I	II	I	II	I	II	I	II
H	179		179		245		245	
L	160		180		200		230	
D	115	125	140	135	150	155	165	165
K	85,00	88,90	100,00	98,40	110,00	114,30	125,00	127,00
I	14,00	19,10	18,00	19,10	18,00	22,20	18,00	19,10
b	18,00	17,50	18,00	19,10	18,00	20,70	20,00	22,30
A	135		170		170		170	
DRILLS N°.	4		4		4		4	
WEIGHT IN kgs.	8,04	14,01	9,78	15,51	10,75	17,27	12,27	18,27
CODE 2103-460.	8104	81041	8144	81441	8124	81241	8204	82041



Performance and discharge

Purges shall be carried out at times when the water is at rest or when there is minimum steam extraction, so that the sediments are deposited at the bottom of the boiler.

At least one blowdown should be carried out every 8-hour shift. The effective duration is estimated to be between 3 ÷ 4 seconds, although it is recommended to follow the following mathematical model:

In order to stabilise the salinity of the boiler, it is necessary that the quantity of salts extracted per unit of time is equal to that provided by the feed water in this same period.

This can be expressed as follows: $S \cdot A = C \cdot P$

R = Real steam production of the boiler (kg/h)
A = Water supply (kg/h)
P = Water extracted in the bleeding process. (kg/h)
S = Conductivity of the feed water (µS/cm)
C = Desired conductivity inside the boiler (µS/cm)

Example:
Δp = 20 bar
R = 1850 kg/h
S = 150 µS/cm
C = 4000 µS/cm
P = 72,07 kg/h

The amount of water extracted in the purge process:

$$P = \frac{R \cdot S}{C - S}$$

The effect is achieved when the salt discharge is continuous and without oscillations in order to avoid uncontrolled losses of boiler water.

For the DN of the chosen valve, the flow rate of water removed in the purge process (P) can be calculated according to the graph.

To remove sludge, turbulence must occur, and this is achieved with short and fast blowdowns (3 to 5 sec.).

The combination of the Continuous desalting valve* and the Blowdown valve for bleeding dirt and sludge• is essential for optimizing the boiler's efficiency, and include its maximum security and availability.

Neither of them can be replaced with others not designed for this specific application. Their moderate cost is depreciated in the short term.

* (See brochure Model 560 and 560-A).
• (See brochure Model 660 and 660-A).

VYC industrial, sau
Founded in 1914
www.vycindustrial.com
Avenc del Daví, 22 Pol. Ind. Can Petit 08227 TERRASSA (Barcelona) SPAIN
+34 93 735 76 90 119 info@vycindustrial.com

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