Blowdown valve for automatic bleeding dirt and sludge

EN ASME/ANSI

DN-20 and 25 **MP-2** **DN-32,40 and 50**

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 increases.
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:

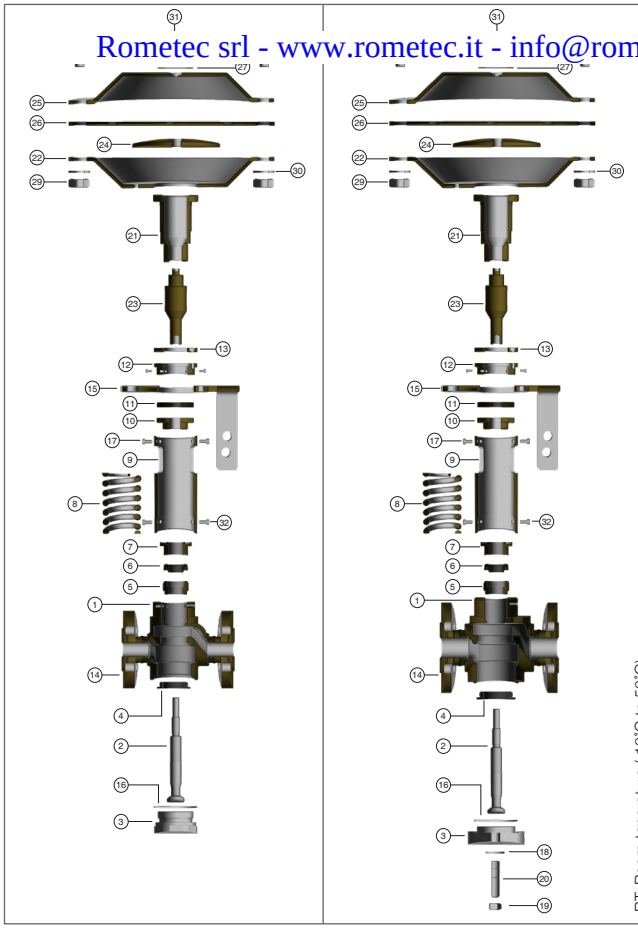
- Destroy the metal plate of the boiler, causing high maintenance costs.
- Produce thermic voltages, causing cracks in the metal plate and soldering cord.
- Notably slow down thermic transmission, meaning an unnecessary and excessive consumption of fuel.

Nominal pressure: PN-40.
Flange connection: DN-20, 25, 32, 40 and 50 (EN-1092-1)
Flange connection: ASME/ANSI B16.5: NPS-3/4, 1”, 1 1/4”, 1 1/2”, and 2”.

Specifications

— The drainage section is opened quickly and completely by the pressure of the control fluid on the membrane. The deposits collecting at the bottom of the boiler, are disturbed and sucked up by the sudden air intake which carries them out.
— Instant closing device, preventing irrevocable losses of water and pressure.
— Seating and closing axis treated and balanced, so that a degree of tightness, even higher than the leve required by
— EN 12266-1, is obtained.
— Coupling of the closing axis is self-tightening and maintenance free.
— Possibility of coupling manually operated mechanisms.

IMPORTANT
Depending On demand:
— Possibility to incorporate the lever/pedal.
— As a solution to space problems, the lever/pedal can be positioned vertically or horizontally and it is also possible to rotate the head with the lever/pedal 360°.



N°. PIECE	PIECE	MATERIAL			
2	Axis	Stainless steel (EN-1.4028)			
3	Purge plug	Carbon steel (EN-1.1191)			
4	Seating	Stainless steel (EN-1.4028)			
5	Body ring	Bronze (EN-CC491K-GZ)			
6	Retene	E.P.D.M.			
7	Gland	Bronze (EN-CC491K-GZ)			
8	Spring	Spring steel (EN-10270-1-SH)			
9	Cover	Carbon steel (EN-1.0580)			
10	Spring press	Carbon steel (EN-1.1191)			
11	Spring press nut	Carbon steel (EN-1.1191)			
12	Cover cap	Carbon steel (EN-1.1191)			
13	Cap disc	Carbon steel (EN-1.1191)			
14	Flange	Carbon steel (EN-1.0460)			
15	Support	Carbon steel (EN-1.0037)			
16	Purge plug gasket	PTFE+Car.Silicon			
17, 28, 32	Screw	Carbon steel (EN-1.1191)			
18, 30	Washer	Carbon steel (EN-1.1141)			
19,29	Nut	Carbon steel (EN-1.1141)			
20	Stud	Carbon steel (EN-1.1181)			
21	Support Base	Carbon steel (EN-1.1191)			
22	Base	Carbon steel (EN-1.0037)			
23	Chuck	Carbon steel (EN-1.1151)			
24	Plate	Carbon steel (EN-1.1191)			
25	Cap	Carbon steel (EN-1.0037)			
26	Membrane	Nitrile/Nylon			
27	Sticker	Sticker			
31	Sleeve	Carbon steel (EN-1.0114)			
	DN	25 to 50			
	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	19,6	17,7	13,8	12,1
	MAXIMUM TEMP. IN °C	-29° to 38°	100	200	250
OPERATING CONDITIONS 300# ASME B16.5	PRESSURE IN bar	40	37,4	33,6	30,7
	MAXIMUM TEMP. IN °C	RT	100	200	250

Efficiency and Emptying

Bleeding processes should coincide as far as possible with moments when the water is at rest or at minimum steam extraction, so that the deposits are collected at the bottom of the boiler. Carry out bleeding process at least every 8 hours. The effective duration is estimated to be 3 ÷ 4 seconds although we recommend you keep to the following mathematical model: To establish the salinity of the water, the quantity of salts extracted per unit of time must be equal to that of the water supply in this same period. Which can be expressed:

$$S \cdot A = C \cdot P$$

Water supply conductivity [µS/cm] · Water supply [l/h] =
Desired conductivity inside the boiler [µS/cm] · Water extracted in the bleeding process [l/h]

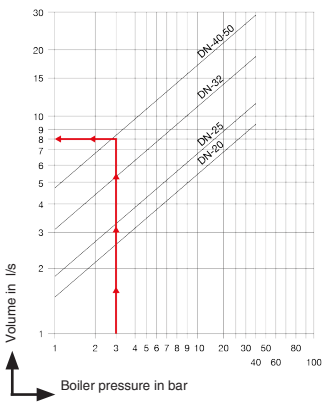
Where:
R = Real steam production of the boiler (kg/h)
A = Water supply (l/h)
P = Water extracted in the bleeding process (l/h)
S = Water supply conductivity (µS/cm)
C = Desired conductivity inside the boiler (µS/cm)

Water extracted in the bleeding process:

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

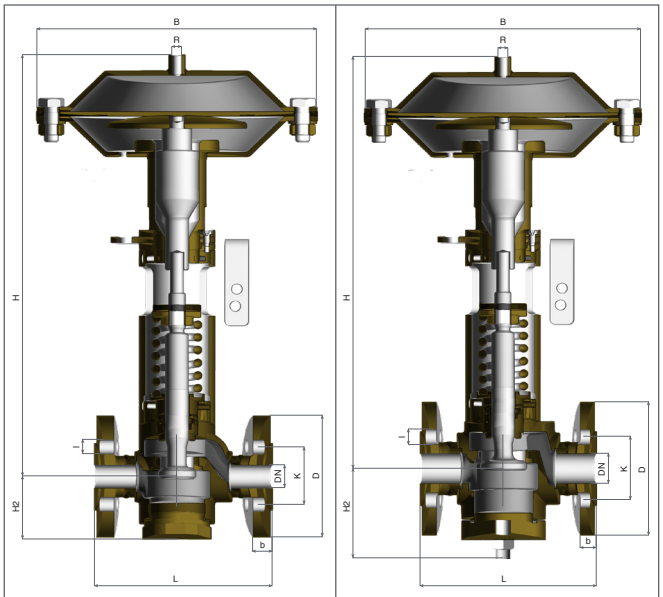
Example:
R = 1520 kg/h
S = 200 µS/cm
C = 4000 µS/cm
P = 80 l/h

For the DN the volume (q) in l/s can be calculated as shown in the diagram.
The quotient (P/q) tells us the intervals between bleeding processes and the duration of them (T) in seconds per hour.



Example:
Water extracted in the bleeding process (P) = 80 l/h
Pressure in the boiler (p) = 3 bar
Volume (q) = 8 l/s

T = 10s.
- The boiler will bleed itself for 10 seconds every hour.
- If the bleeding time is of 3 seconds = 3 bleeding every hour. The interval between bleeding should be of 20 minutes.



DN	20			25			32			40			50		
CONNECTIONS	I - Flange PN-40 EN 1092-1														
	II - Flange class 150 lbs ASME B16.5														
	III - Flange class 300 lbs ASME B16.6														
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
H	355,5			355,5			409			409			409		
H2	54,00			54,00			106,00			106,00			106,00		
L	150			160			180			200			230		
B	235,00			235,00			235,00			235,00			235,00		
D	105	100	115	115	110	125	140	115	135	150	125	155	165	150	165
K	75,00	69,90	82,60	85,00	79,40	88,90	100,00	88,90	98,40	110,00	98,40	114,30	125,00	120,70	127,00
I	14,00	15,90	19,10	14,00	15,90	19,10	18,00	15,90	19,10	18,00	15,90	22,20	18,00	19,10	19,10
b	18,00	12,70	15,90	18,00	14,30	17,50	18,00	15,90	19,10	18,00	17,50	20,70	20,00	19,10	22,30
DRILLS Nº	4			4			4			4			4		8
R	1/8"														
CONNECTION	Whitworth gas-tight cylindrical female thread ISO 228/1 (DIN-259)														
WEIGHT IN Kgs.	11,50			12,00			17,50			18,50			21,00		
CODE 2103-660.	83441	834412	834413	81041	810412	810413	81441	814412	814413	81241	812412	812413	82041	820412	820413

Programmable control for automatic bleeding of dirt and sludge

MP-2

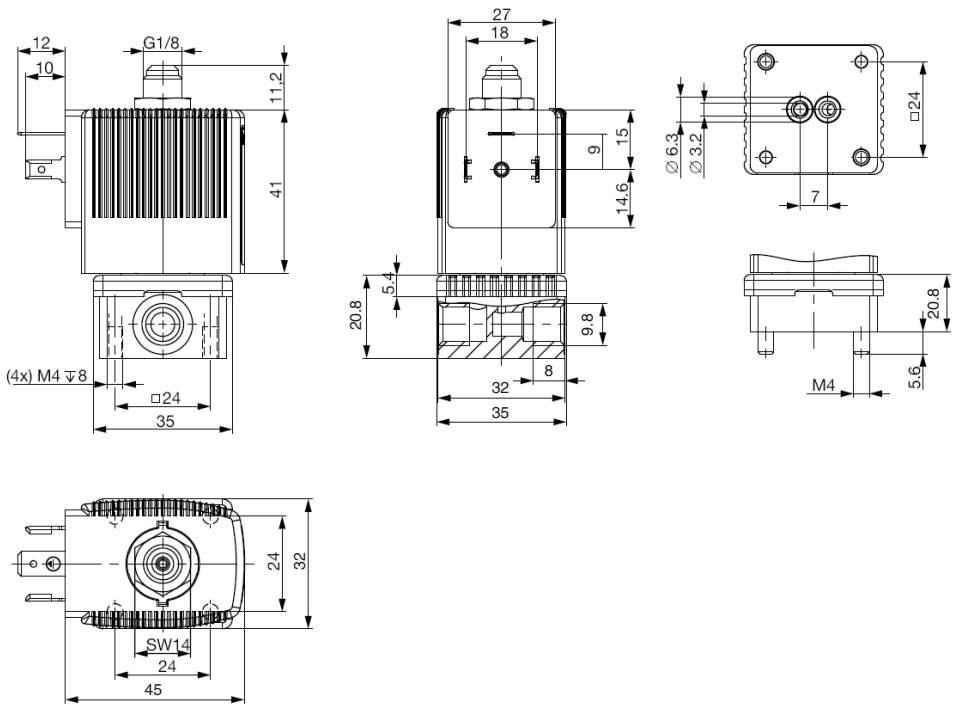
The control unit for automatic programmable sludge and sludge purging consists of a 3-way electrovalve and a timer for the interval between purges and the purge duration.

Specifications 3-way electrovalve

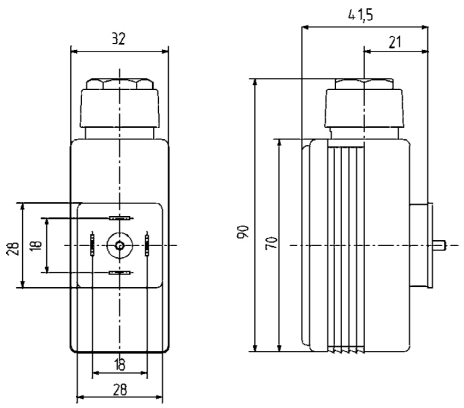
— Voltage: 230 V ±10% 50 Hz
— Nominal power: 8 W
— Ambient temperature: -10 to 55 °C
— Protection category (IP max. with suitable connector): IP65
— Threaded connections: G 1/8”.
— Effective pitch: Ø2 mm
— Max. nominal working pressure: 10 bar
— Valve function type manual override: Rotary lever
— No lubrication required
— Operating medium: Filtered air

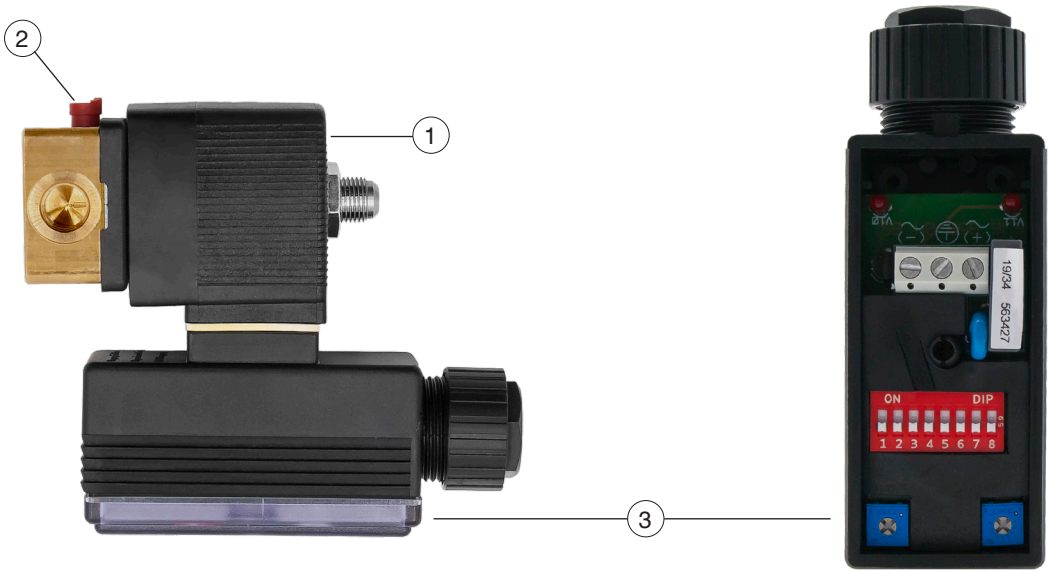
Dimmensions (mm)

Electrovalve



Timer





Before starting the automatic purge process, the “interval between purges” and “purge duration” times must be set. Check that the air pressure in the 3-way electrovalve (1) is 4-7 bar and the input voltage is 230 V AC. In the timer (3) incorporated in the 3-way electrovalve itself, we can set the “interval between purges” and the “purge time”. Once the preset time has elapsed, it sends an impulse to the 3-way electrovalve (1), giving way to the control fluid (air), which acts on the membrane, achieving a quick and total opening of the valve. Once the “purge time” has elapsed, the 3-way electrovalve (1) is deactivated, cutting off the flow of the control fluid and the valve closes mechanically by the action of the spring. The next purge will take place after the “purge interval” time has elapsed. By activating the selector (2) incorporated in the “manual blowdown” electrovalve itself, a specific blowdown is achieved and, if desired, the boiler can be emptied.
The three-way electrovalve can be operated manually in the event of a power failure by means of the selector (2).

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 brochrues for models 560 and 560-A).
•(See brochures for models 460, and 660).

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