

## GESTRA Steam Systems

# GESTRA Information B 5

## ASME Conformity for the New GESTRA Intermittent Blowdown Valves PA 46/47 and MPA 46/47

ASME guidelines are frequently prescribed for the design and construction of industrial plants, not only in America but also in many other regions of the world. The ASME rules – issued by the American Society of Mechanical Engineers – are technical regulations that are applied in various sectors of industry and are subject to constant revision. This information is intended to give you an overview of the current regulations for the intermittent blowdown of steam boilers and how these are fulfilled by the GESTRA intermittent blowdown valves.

### Terminology and variations in usage

Intermittent blowdown valves are mostly used for steam boilers, steam drums and pressure vessels. They serve to discharge bottom deposits continually during operation. Steam boilers are classified in the ASME Code as so-called “power plants”, as used in industrial power stations and in heating units. For these plants, the “Power Piping Code” B 31.1 is applicable.

The terms for intermittent blowdown and continuous blowdown differ in American and Anglo-Saxon usage, and also vary according to source. The American ASME Code uses “blow-off” to mean intermittent blowdown (sometimes spelt “blow down”). In the UK-English sphere, the expression “blowdown” generally means intermittent (bottom) blowdown, whereas “continuous blowdown” is normally used explicitly. To prevent confusion and misunderstandings, it is advisable to enquire about the function of the valve. If deposits at the bottom of the vessel (i.e. sediments) are to be discharged, then we speak of intermittent blowdown. On the other hand, if dissolved salts are to be removed from the boiler water, then it is continuous blowdown. Different valves are available to suit the corresponding application.

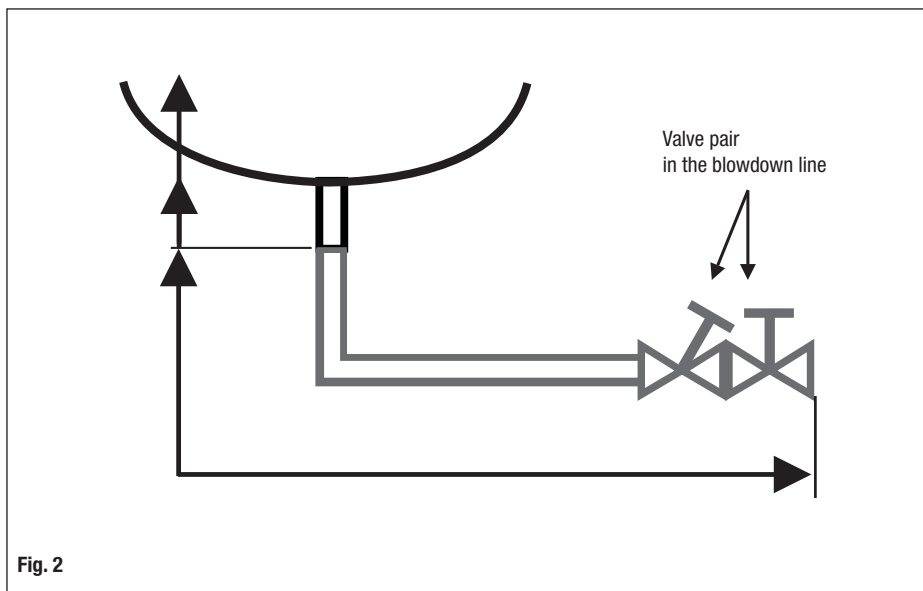
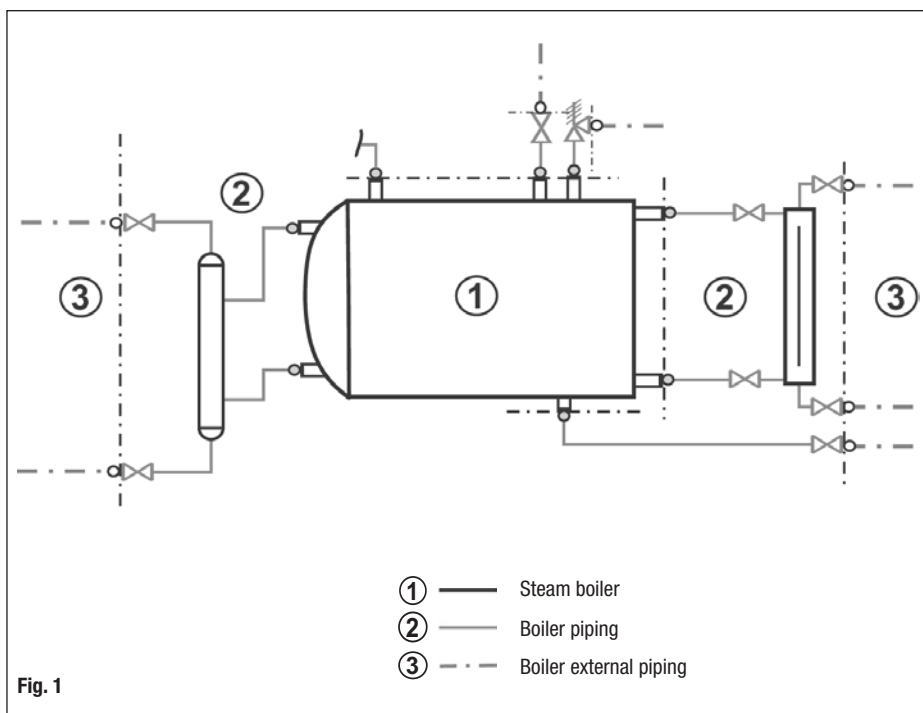
### Intermittent blowdown valves belong to the “boiler external piping”

In Code B 31.1, three zones are defined which are subject to different requirements. Intermittent blowdown valves belong to Zone 2 of the “boiler external piping”. This group also contains continuous blowdown valves, drain valves and safety valves, i.e. all those valves that are mounted directly at the boiler or in pipework attached there (Fig. 1).

### The “valve pair” (Code 31.1, § 122.1.4)

Here it is prescribed that two valves must always be installed together in the blowdown line: an intermittent blowdown valve and a shut-off valve. The blowdown valve is often operated in intermittent mode, i.e. only opened for a brief period. This is also true of the GESTRA valves (M)PA 46/47. They have a special rapid-closing mechanism which is able to open and close the valve suddenly. Their opening action creates a suction effect that draws off the sediments deposited on the bottom of the boiler. This process takes three seconds at most.

Function	America (ASME B 31.1)	Anglo-Saxon
Intermittent blowdown	blow-off ( <i>intermittent</i> )	Bottom blowdown ( <i>intermittent</i> )
Continuous blowdown	blowdown ( <i>surface</i> )	blowdown ( <i>Continuous</i> )



If the opening times were to be longer, the suction would be reduced and only the hot boiler water would be discharged, resulting in a waste of energy.

The shut-off valve is often used only in emergencies and usually remains open during normal operation. One of the two valves in this pair must be capable of closing the line slowly. However, either valve must also be able to shut off the line independently of the other, in case one fails. (Fig. 2)

### Design data: wall thicknesses, admissible pressure and materials

According to the ASME regulations, the pipeline must be constructed as follows:

- For boilers with heating surfaces with an area of more than 100 sqft, the nominal size of the blow-down line must be at least 1 NSP (DN 25 mm) and at most 2½ NSP (65 mm), whereas for smaller boilers ¾ < n.s. < 2½ NSP (ASME 1 § PG 59.3.5; NSP = Nominal Size Pipe).
- For more than 100 PSI (7 bar), the wall thickness must not be less than that of a Schedule 80 pipe.
- The materials must be ASME-conformant.
- For the pressure, an extra margin of 25 % must be considered on top of the maximum allowable boiler pressure, but at least 225 PSI (approx. 15.5 bar – ASME Design Pressure (P) 122.1.4 (A1)).

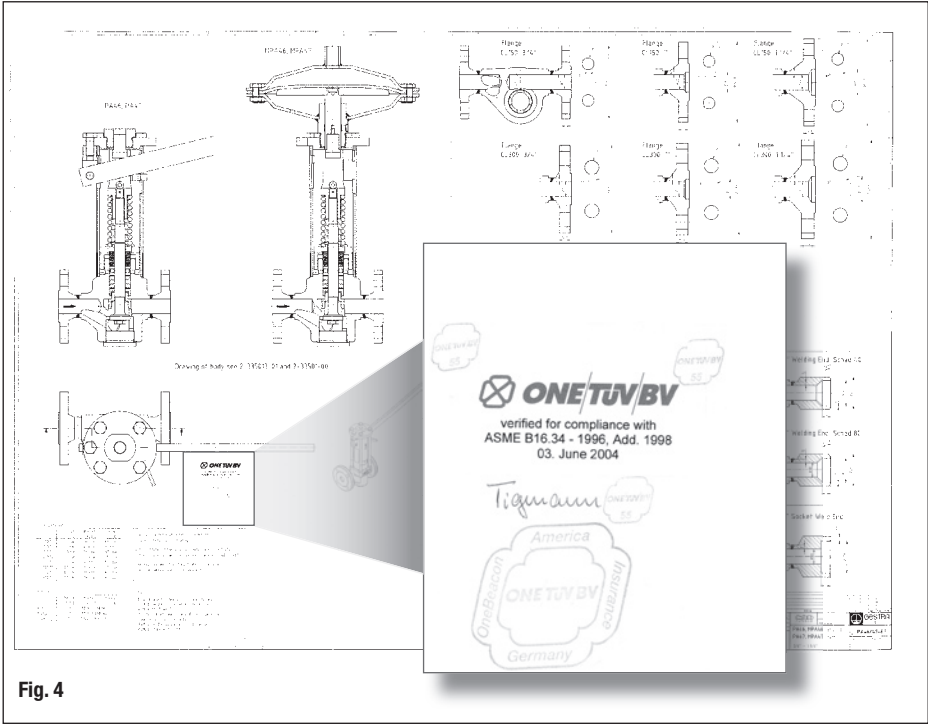
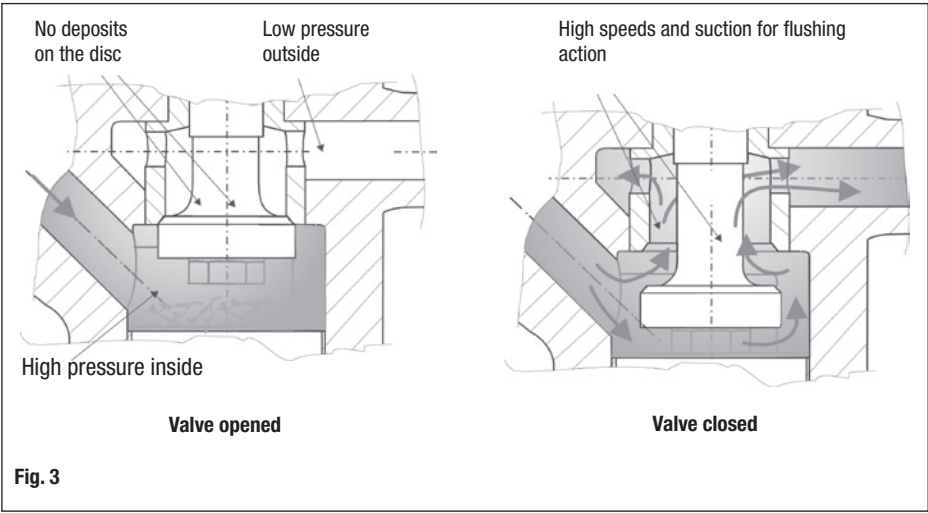
### Preventing deposits in pockets and chambers (B 31.1 122.1.7 C1)

In addition to the requirements concerning the material, dimensions and pressure, the ASME Code stipulates that each valve in the bottom line must be free of internal pockets or other sections which might cause banking-up. Otherwise there is a risk that sediments may build up permanently in such pockets, leading to malfunctions of the system. This excludes simple shut-off valves, where the valve's closing element lies on top of the seat on the inlet side.

With the new GESTRA intermittent blowdown valves (M)PA 46/47, no sediments can be formed at all on the valve disc, since it is located above the interior space, as are the seal rings mounted above it. When the valve opens, all deposits in the interior space below the disc are flushed away or out of the valve (Fig. 3).

### Conformity for the new GESTRA intermittent blowdown valve

The GESTRA intermittent blowdown valves (M)PA 46/47 meet all the requirements of the ASME Code B 31.1 and B 16.34. In compliance with the ASME Boiler & Pressure Vessel Code, Section I, and the ASME B 31.1 Power Piping Code, they can be installed together with a shut-off valve (to form a "blow-off pair") in a blowdown line. This compliance has been confirmed by the company ONE/TÜV/BV (Fig. 4).



### All ASME variants of the new GESTRA intermittent blowdown valve

The intermittent blowdown valve (M)PA 46/47 is available as an ASME-compliant unit in the following nominal sizes and pressure ratings:

Nominal sizes:	[inch]	¾	1	1¼	1½	2
	[mm]	20	25	32	40	50
Class 150 A105		●	●	●	●	●
Class 300 A105		●	●	●	●	●
Class 400 A105		—	●	—	●	●

Should you have any further questions, we will be happy to advise you.

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