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# SAFETY SHUT-OFF DEVICE DB 845



## Introduction

The DB 845 safety shut-off device is designed to be installed in the water circuit of WTG gas preheaters or other similar equipment and has the role of blocking the water circuit if overpressure occurs due to faults in the heat exchanger. The safety shut-off valve is an intermediate unit between the gas preheater designed for maximum inlet pressure and the heating system designed for low pressure.

The safety shut-off design comprises the operating equipment and the control equipment - the water relief valve SD 846.

## Advantages

- Simple design and operation
- Insignificant loss of pressure
- Actuated by the energy available in the system

## Design and operation

Figure 1 shows the main components of the DB 845 safety shut-off device which are the following:

- |                       |                                |
|-----------------------|--------------------------------|
| 1. Body device        | 9. Valve plate holder          |
| 2. Protection cover   | 10. Spring guide               |
| 3. Valve plate holder | 11. Adjustment nut             |
| 4. Piston rod         | 12. Fluid discharge connection |
| 5. Stem guide         | 13. Bushing                    |
| 6. Connections        | 14. Locking piece              |
| 7. Valve seat         | 15. Return spring              |
| 8. Valve body         | 16. Plug                       |

The pressure in the water circuit acts inside the safety shut-off device, as well as on the valve plate that seals the seat (7). If the pressure increases over the SD 846 valve set value, the force exerted on the valve plate exceeds the force exerted by the adjustment spring, thus determining the valve to open and to discharge liquid. Consequently, the piston rod (4) moves until the valve plate mounted on the valve plate holder (3) reaches the sealing surface on the device body (1). Afterwards, the high pressure inside the exchanger is isolated from the rest of the water circuit and acts only on side “A” of the valve plate holder (3).

The plugs (16) have a G 1/4" thread and allow the installation of pressure gauges, if necessary.

The plugs also allow the adjustment of the SD 846 valve and its operation check.

The device opens when the pressure in the heat exchanger decreases to a value lower than the SD 846 set point.

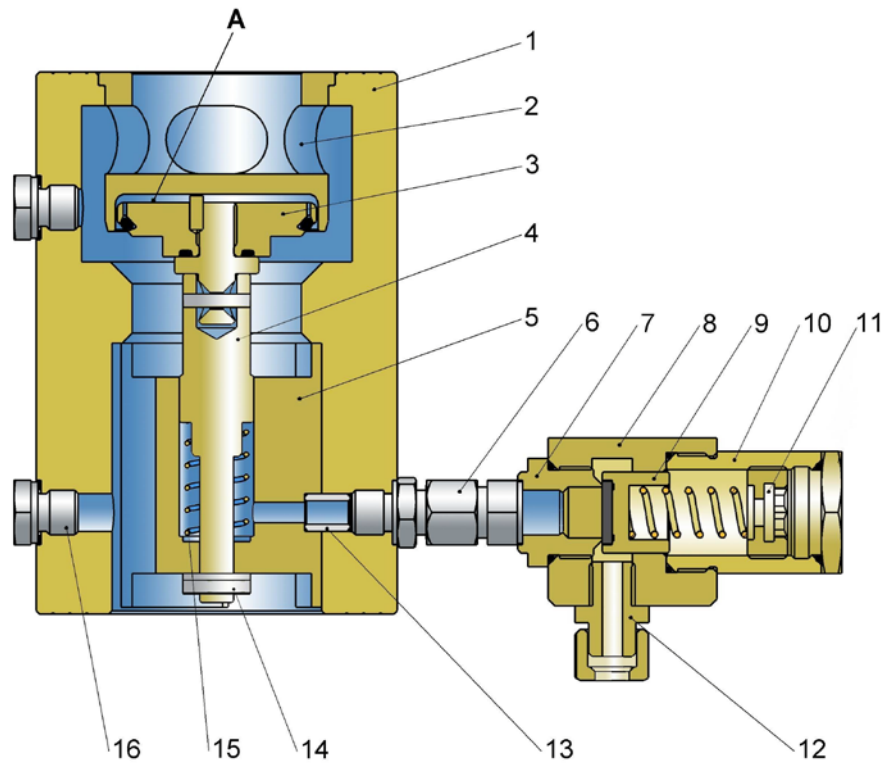


Figure 1 - DB 845 safety shut-off device

The operating diagram of the DB 845 device is shown in figure 2.

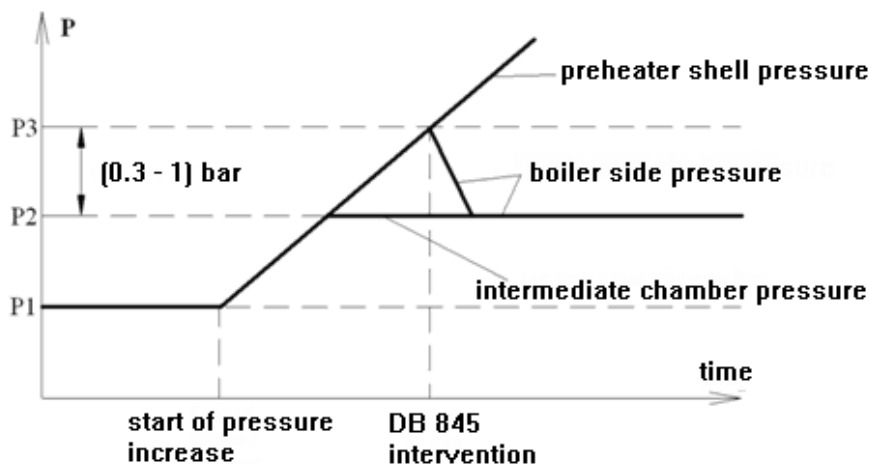
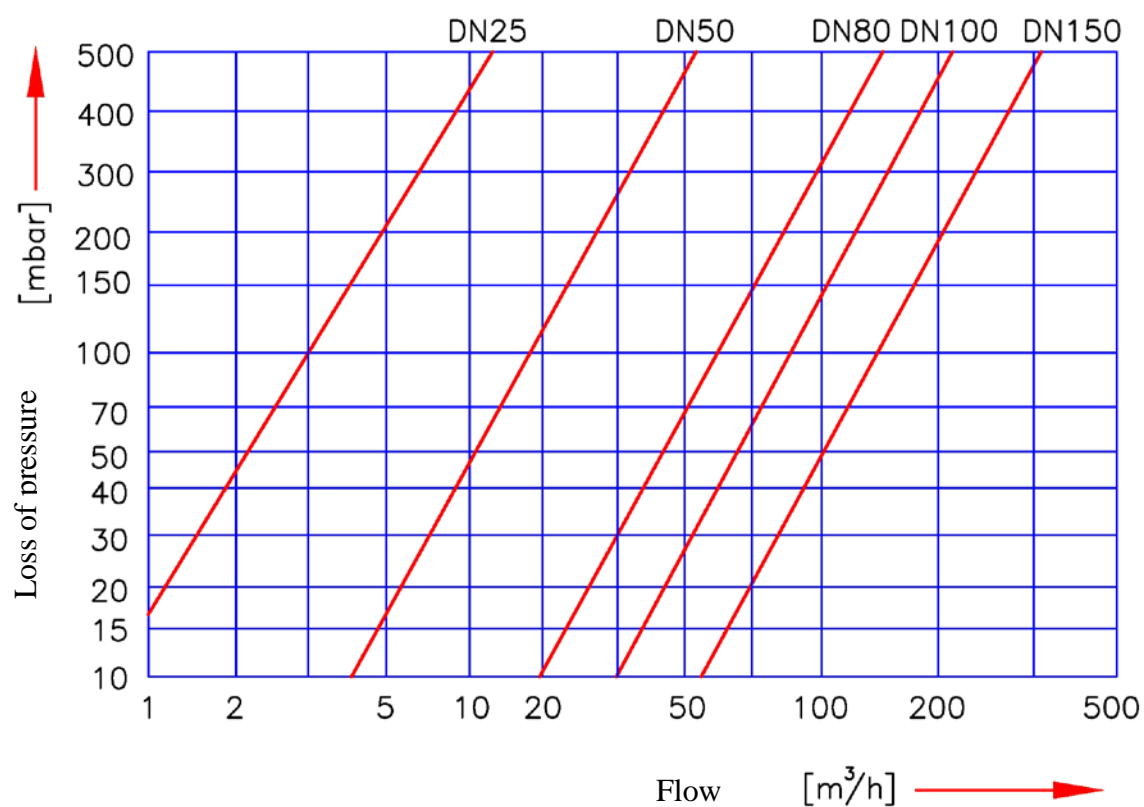


Figure 2 - DB 845 device operating diagram

Loss of pressure depends on the flow rate in the hot water circuit:



## Installation

The device is installed between flanges (adequate for the nominal pressure) and is tightened by means of bolts.

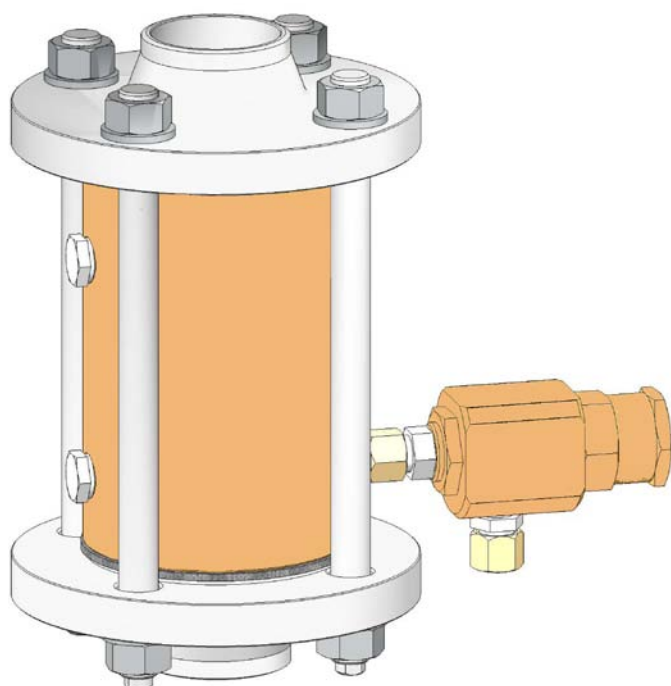


Figure 3 - Installation

The safety shut-off device can be mounted horizontally or vertically; the assembly position influences the intervention pressure (intervention pressure range).

## Technical data

- working medium: water, (thermal carrier fluid)
- maximum working pressure: 40, 64, 100 bar
- dimensions: Dn25, Dn50, DN80, Dn100, Dn150
- valve plate diameter: equal to pipe diameter
- connection: flangeless design

## Materials

- Device body: brass
- Component elements: brass, stainless steel
- Sealing: EPDM, Viton

## Accessories

- flange gaskets
- bolts
- nuts, washers
- position indicator using proximity switch

## Dimensions:

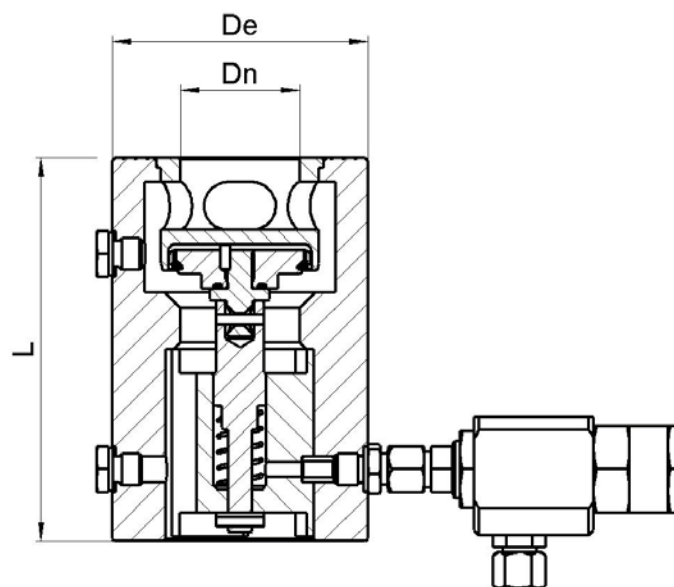


Figure 4 - DB 845 dimensions

Table 1 Pn 40 overall dimensions according to figure 4

Nominal diameter ( <b>Dn</b> )	<b>25</b>	<b>50</b>	<b>80</b>	<b>100</b>	<b>150</b>
Outside diameter ( <b>De</b> ) [mm]	74	108	143	168	223
<b>L</b> [mm]	140	160	160	160	240

Table 2 Pn 64 overall dimensions according to figure 4

Nominal diameter ( <b>Dn</b> )	<b>25</b>	<b>50</b>	<b>80</b>	<b>100</b>	<b>150</b>
Outside diameter ( <b>De</b> ) [mm]	80	110	145	171	244
<b>L</b> [mm]	140	160	160	160	240

Table 3 Pn 100 overall dimensions according to figure 4

Nominal diameter ( <b>Dn</b> )	<b>25</b>	<b>50</b>	<b>80</b>	<b>100</b>	<b>150</b>
Outside diameter ( <b>De</b> ) [mm]	80	116	151	177	254
<b>L</b> [mm]	140	160	160	160	240

## Notation

The safety shut-off devices are identified by specifying the model, the nominal dimension and the design pressure.

DB	845	X	X	Description
		025		DN 25
		050		DN 50
		080		DN 80
		100		DN 100
		150		DN 150
			040	PN 40
			064	PN 64
			100	PN 100

For example, DB 845-050-064 designates a DB 845 safety shut-off valve with nominal diameter DN 50 and maximum design pressure of 64 bar.

The manufacturer reserves the right to make modifications without any prior notification.

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