

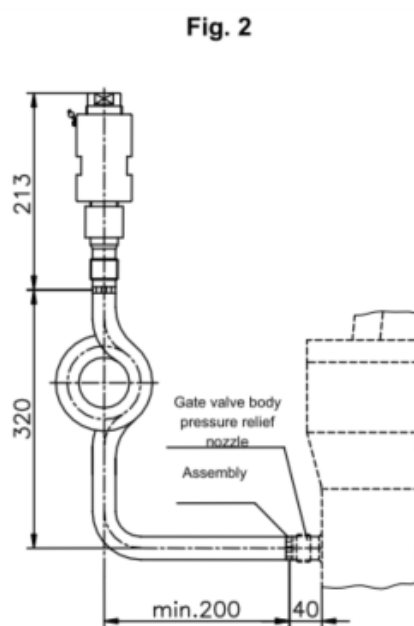
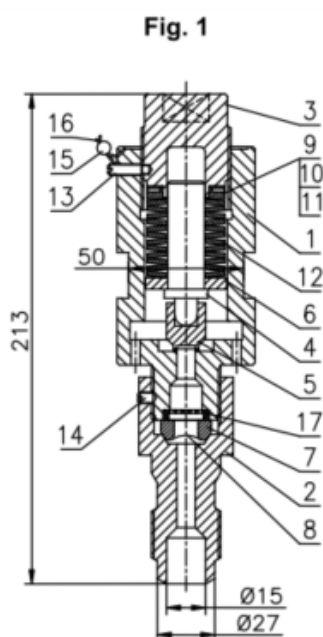
## BODY RELIEF DEVICE with bursting disc type ZBC1

Body pressure relief device with bursting disc is intended for protection of wedge gate valve body from an excessive increase of pressure.

The body pressure relief device is a combination of two elements, screwed together (see Figure 1) :

- safety device which is the lower part of the body pressure relief device
- relief valve which is the upper part of the body pressure relief device

Recommended gate valve body relief system with the body pressure relief device is shown in Figure 2.



**Materials of basic parts of the body pressure relief device**

| Pos. | Part name         | Material         |
|------|-------------------|------------------|
| 1    | Body              | 1.7335           |
| 2    | Nozzle            | 1.5415<br>1.7335 |
| 3    | Screw plug        | 1.4021           |
| 5    | Plug              | 1.4057           |
| 7    | Thrust ring       | 1.4541           |
| 8    | Bursting disc     | Inconel          |
| 12   | Spring            | 50CrV4           |
| 17   | Protecting screen | 1.4021           |

**Material versions of the body pressure relief device unit**

| Gate valve body material and body pressure relief nozzle material | Bent pipe material | Pressure relief device material |
|---|--------------------|---------------------------------|
| P250GH  | P265GH             | 13CrMo4-5                       |
| 16Mo3<br>13CrMo4-5<br>15NiCuMoNb5                                 | 13CrMo4-5          | 13CrMo4-5                       |
| 11CrMo9-10<br>14MoV6-3<br>X10CrMoVNb9-1                           | 11CrMo9-10         | 13CrMo4-5                       |

Each standard version high pressure gate valve with pressure seal bonnet is equipped with the body pressure relief nozzle. Location of this nozzle is shown in technical documentation of gate valves.

Body pressure relief device, along with welded bent pipe, is delivered as not welded to the body nozzle, unless agreed otherwise.

### Assembly of the body pressure relief device

Since there are various methods of gate valve body pressure relieving, choice of the method belongs to the designer of piping installation. When body pressure relief device is applied it shall be welded to the body nozzle vertically upward as shown in Figure 2.

Pressure relief device shall be assembled after pressure testing of piping installation.

### Principle of operation of the body pressure relief device is as follows:

- 1) Safety device has bursting disc selected for rupture pressure equal to  $1,5 \times PS$ , where PS is the fluid maximal allowable pressure in normal working conditions of the installation.
- 2) Relief valve has spring adjusted to set pressure  $P_{po}$  of about  $1,3 \times PS$ . This adjusting is done in factory using screw plug pos. 3 and is sealed. Damaging of the seal leads to forfeiture of warranty claims. Re-adjusting of relief valve can be made only on special testing stand, preferably in CHEMAR VALVES
- 3) When pressure in the gate valve body increases to approximately  $1,5 \times PS$ , rupture of the bursting disc, lifting of the relief valve plug and blowing out of the excessive fluid to the atmosphere take place.
- 4) Because volume of the gate valve body cavity is relatively small and the fluid is water, pressure in the body drops quickly. At the pressure decrease below  $1,3 \times PS$  closing (not necessarily tight) of the relief valve occurs.
- 5) Tight closing of the relief valve is not required because evaporation from directed downward blow-out holes of this valve is the signal of emergency condition, i.e. bursting disc is damaged and during the nearest power unit stoppage it shall be replaced. Spare bursting discs are included in the delivery of the body pressure relief device.

### Body pressure relief device ordering

Body pressure relief device or pressure relief device with welded bent pipe should be ordered using symbol as follows:

