

	INSTRUCTION FOR INSTALLATION AND MAINTENANCE	PV 2501, -02 PV 6101, -02, -03, -04 PV 6301, -02, -03, -04
	SPRING LOADED SAFETY VALVES	PM - 212/19/07/GB

Instructions for installation, operation and maintenance of safety valves type PV 25, 61 a 63 are obligatory for users. They help to assure right and reliable function of valves. If this instructions aren't observed, the valve manufacturer's guarantees will expire and manufacturer isn't responsible for possible damages, injuries and losses. The manufacturer has the right improve the design and performance of the valves without prior announcement.

1. FUNCTION OF SAFETY VALVE

The safety valve is safety device for protection against excessive pressure in boiler, pressure vessel, pipeline etc., designed according to EN ISO 4126-1 standard. The safety valve starts to open just in the time, the force caused by pressure of protected medium is equal to force caused by valve's spring, adjusted to desired set pressure. Other increasing of medium pressure (by 10%, respectively 25%) causes full opening of valve. The disc of valve (pos. 3) is equipped by bell (pos.4), which larges the area, influenced by pressure of medium. It causes fast opening of valve.

2. CONDITION OF DELIVERED VALVE

The delivered valve is tested, the set pressure adjusted according the customer's demand. The setting is sealed with seal between the cap and bonnet.

Following information are casted at the valve's body:

1. Nominal diameter (DN inlet x outlet)
2. Nominal pressure (PN inlet x outlet)
3. Body material
4. Flow direction (arrow)

Data on valve's ID plate:

1. Valve type
2. Production number (YY/XXXXX)
3. Set pressure pset [barg]
4. Relieving capacity [t/h]
5. Seat area A [mm²]
6. Type of medium and respective flow coefficient Kdr [-]
7. Max. working temperature T [°C]
8. Lift H [mm]

Following data are marked on the outlet flange:

1. Spring's number
2. QC identification mark
3. Set pressure pset [barg]
4. Production number (YY/XXXXX)

3. INSTRUCTIONS FOR VALVE INSTALLATION

- The valve should be visually inspected prior the installation, to assure, that it is clean, free of damage and operational. The protecting blinds must be removed from the flanges and special care must be taken to inspection of internal area (dirt, corrosion) and flange's sealing surfaces.

- The rope/harness for transport/lifting must be placed round the body and bonnet, as shown on the picture No.3. The rope must be never fixed to lifting lever.

- The valve should be installed in the upright position with the spindle vertical. The wire, which served for fixing of lifting lever during the transport must be removed.

- Inlet and discharge piping. The piping must fulfill demands of local directives, rules and codes. The cross section and lengths must be designed so, that no restriction of capacity is caused with it (inlet piping pressure drop must be less than 5% pset and total backpressure in discharge piping must be less than 15% pset).

In case of common discharge pipe for more safety valves, the cross section of such pipe must be equal or larger than sum of all valves outlet areas. More, the discharge piping should be "flow-friendly" /properly designed (short, without small radius bends, fittings, sharp edges, e.t.c.) and, in case the valve's body hasn't draining hole, laid with inclination downstream to valve, with draining system (free draining is strongly recommended) placed in lowest point. In case, the valve's body is equipped with drainage connection, the draining system is connected there. The drainage should be made as free draining (it should be visible escape of medium, if the safety valve is opened).

- Inlet and discharge piping. must be properly supported/fixed, not to transmit any force, bending moment or torque from pipeline to valve's body.
- Supporting brackets are placed on body of valve Series 6X02, 03 and 04, dimensions DN \geq 40. The purpose is to fix the valve there and carry the reaction forces, aroused during the valve function (relieving).
- Discharge piping should be designed to eliminate thermal dilatation in case of steam or hot gases relieving (see Pic.2).
- Valve mustn't serve as support for connected piping or protected device.
- Flange sealing (valve/piping) should be chosen for respective medium and working conditions (pressure, temperature).
- Flange bolting must be tightened properly, with recommended torque. It's strongly recommended to check it. eventually retighten it, if necessary.
- Valve should be installed on the place with good access for maintenance personnel. In case of outdoor installation., the valve should be protected from percipients. If the valve is placed on place/platform, where the frequent presence of personnel is expected, the safety provisions must be done to protect life and health (safety barriers, silencers, etc.).

4. INSTRUCTIONS FOR VALVE OPERATION

The qualified, regularly done maintenance is necessary for reliable function of safety valve. Any laches of maintenance can cause loss of valve's function and subsequently the damage of protected device. For this reason, during the safety valve/protected device operation, it's necessary to:

- Properly set the opening pressure according to the specification (regarding the protected device parameters).
- Visual inspection of each part of safety valve (mechanical damage, corrosion)
- Regular test of safety valve function
- Periodical maintenance

The lifting lever is used for test of safety valve function. If the lever is moved in the direction of arrow „O” (see pic. 1), the spring force, loading the disc, is decreased and safety valve starts to open.

This is possible, if the operating pressure of protected device is 80% of set pressure, at least. The man force is enough to do it. Any multiplication of this force, by using the extension or her device is strongly prohibited. It can cause the damage of the lifting lever, respectively the lifting fork (pos. 15) and there is no other possibility how to open/regularly test the valve To close the valve, the lifting lever must be returned back to it's basic position.

Some impurities can stick on the seat during valve's opening. It obstructs tight closing of valve. The repeated opening of valve usually blow this impurities out. If not, the protected device must be shut down as soon as possible and the impurities must be removed, eventually valve must be repaired (seat faces regrind).

If the leakage of the valve with soft seat is detected, usually the sealing is damaged. It must be changed in this case.

NOTE: The leakage of protected medium between the spindle (pos.10) and guide (pos.5)/pressure sleeve (pos.6) in case of function (opening) the valve PV61 type, is not the defect and reason for the claim. This is standard phenomenon of safety valve with open bonnet and is caused by nonpresence of packing (requirement of EN ISO 4126-1 Std.). If this condition isn't allowed regarding the type of protected medium (explosive or poisoned gas/liquid) or regarding the danger of people injury/nearby device damage, the valve PV63 type must be used or the suitable measure (protected shield, other position of valve installation, etc.) must be arranged to prevent it.

5. INSTRUCTIONS FOR VALVE MAINTENANCE

For proper function of safety valve following must be assured:

- Sealing surface of disc and seat must be parallel
- Quality of sealing surface must allow the tight closing
- Movable parts of valve mustn't be blocked

During the operation of valve, periodical inspections and, based on it's result, respective repairs must be done. The inspections should be done by experienced and certified personnel. The repairs should be done by valve manufacturer, having suitable equipment for diagnostics and repairs, or by company, having manufacturer's certification. The records must be done about every inspection, functional test or repair.

6. NOTE

Apart from the recommendations and demands of given above, the rules and standards, valid in place of valve installation must be kept during the valve operation.

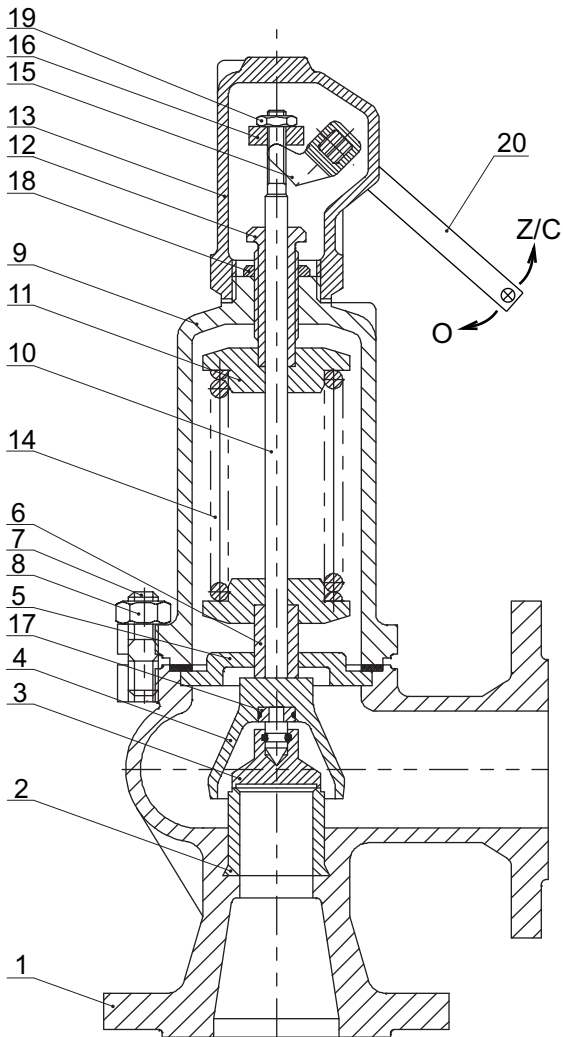
7. HANDLING AND STORAGE

The special care must be taken during the transport, handling and storage of safety valve, to prevent it's damage. The valves must be protected from water, dust and mud and should be stored in place, where the relative humidity is below 90%. For the transport, the lifting lever is fixed with wire to outlet flange (holes for screws). The inlet and outlet ports are covered with blinds. Outer surface of valve is painted.

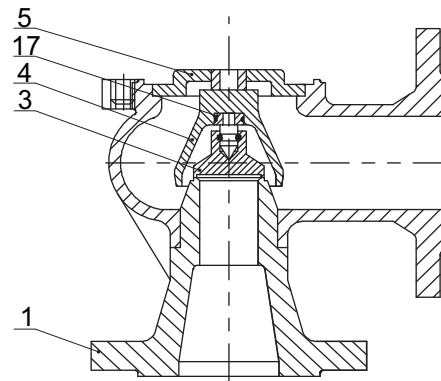
The valve should be shipped in upright position!

7. DESCRIPTION

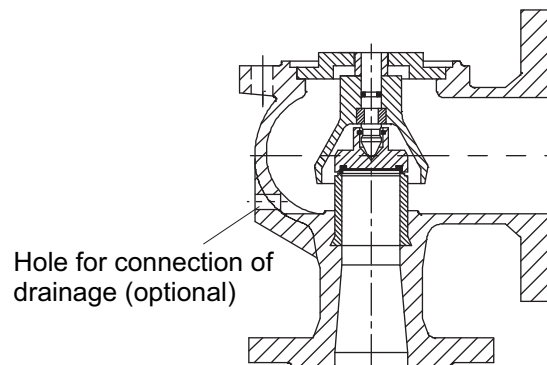
Position	Name	Position	Name
1	Body	11	Spring plate
2	Seat/Inlet nozzle	12	Adjusting screw
3	Disc	13	Cap
4	Bell	14	Spring
5	Guide	15	Lifting fork
6	Pressure sleeve	16	Support nut
7	Stud	17	Safety ring
8	Nut	18	Lock nut
9	Bonnet	19	Lock nut
10	Spindle	20	Lever



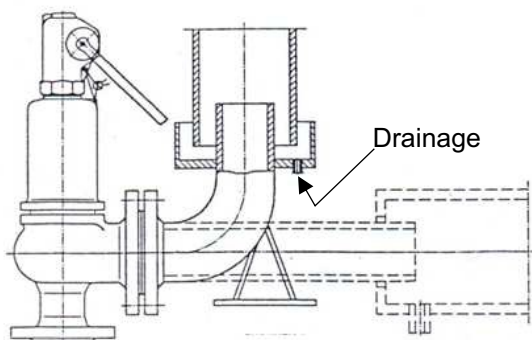
Obr.1



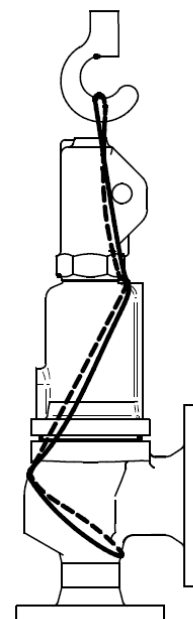
Execution 03/04



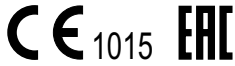
Hole for connection of drainage (optional)



Obr.2



Obr.3



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