SELF-ACTUATING PRESSURE REDUCING REGULATORS **TYPE ZSG 1**

APPLICATION AREA:
These regulators are used to maintain the desired working pressure in process instalations that are connected to the outlet of the adjusting valve. Pressure rise in the monitored installation results in the valve shut-off. The valves are used in heating systems, industrial facilities to control pressure of flowing water, either cold or hot with temperature up to 150°C as well as non-flammable gases up to 80°C. Nominal pressure for the valves is PN25. Application of the devices for other utilities needs authorization of the manufacturer.

FEATURES:
- compact, sturdy design with small overall dimensions,
- high accuracy of adjustment,
- wide range of flow coefficients K_{VS},
- wide variety of connections, easy installation,
- protection against hydraulic overloads,
- guaranteed internal tightness and lack of external leaks,
- silent operation,
- long lifetime.

DESIGN:
The regulator consists of the flow control valve (01) and the hydraulic actuator (02) that are combined into a single (cast) structure. The adjusting unit (03) for the controlled pressure is placed outside the actuator.
Valve - single-ported, with a pressure balanced plug, with tight shut-off.
Actuator - diaphragm–type, with robust and durable diaphragm (active area of 40 cm^2).
Connections - pipe stubs for welding, threaded stubs or flanges to PN, DIN or ISO for pressure PN16 or PN25 as well as CL150 (the device with no connections is also available).

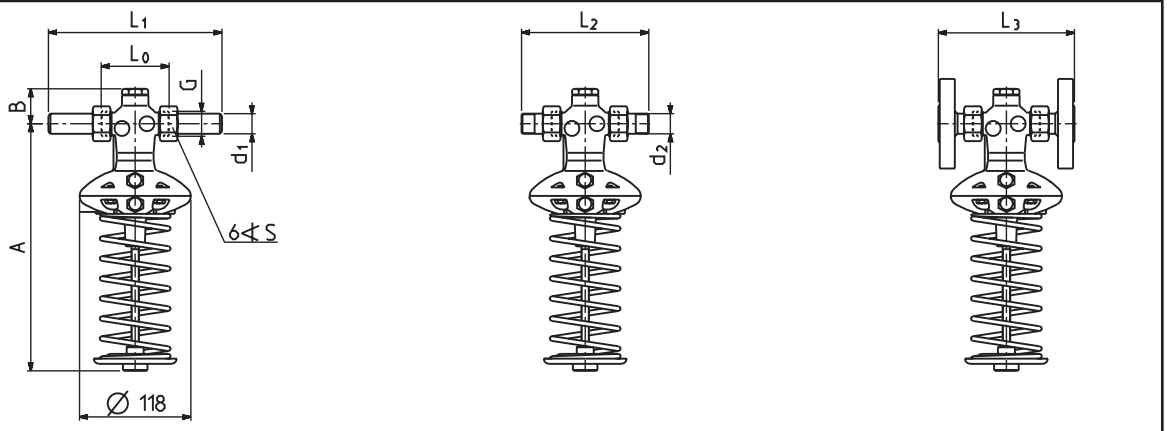
OPERATION PRINCIPLE:
When de-energized, the regulator valve is open. The impulse of adjustable pressure is delivered via a impulse pipe to the actuator chamber from the side of the spring. Pressure rise, above the presettable value that is adjusted by tension of the spring in the adjusting unit, results in proportional closing of the valve seat until the moment when the desired pressure value is restored.

DESIGN OPTIONS:
ZSG 1.1 - with a permanent connection (factory-made) of pressure impulse to the regulator,
ZSG 1.2 - the impulse line can be connected to a whichever point of the installation downstream the regulator outlet.

37-700 Przemyśl, 23 Obozowa St.
tel. +48 16 678 66 01, fax +48 16 678 65 24
marketing@polna.com.pl, www.polna.com.pl

TECHNICAL PARAMETERS:

Nominal diameter DN		15	20	25	32
Flow coefficient K_{VS} [m^3/h]	full	3,6	5	7,2	10
	reduced	2,5 1,6 1 0,5	3,6 2,5 1,6 1	5,7 3,6 2,5 1,6	7,2 5,7 3,6 2,5
Noise factor Z		0,6		0,55	
Connection size for the body G		G 3/4	G 1	G 1 1/4	G 1 3/4
Outer diameter of the pipe d_1 [mm]		21,3	26,9	33,7	42,4
Outer diameter of the connecting stub d_2		R 1/2	R 3/4	R 1	R 1 1/4
Wrench size S		32	41	50	60
Face-to-face length	L_0 [mm]	70	75	80	105
	L_1 [mm]	184	199	224	269
	L_2 [mm]	136	151	164	195
	L_3 PN / CL [mm]	130 / 184	150 / 184	160 / 184	180 / 200
Height	A [mm]	250	250	250	265
	B [mm]	36	36	38	49



- with connecting stubs for welding — - with threaded connection — - with flanges

Nominal pressure:
- for the body – PN25
- for flanges – PN16; PN25; CL150

Allowable pressure drop:
- across the valve – 16 [bar]
- across the actuator – 16 [bar]

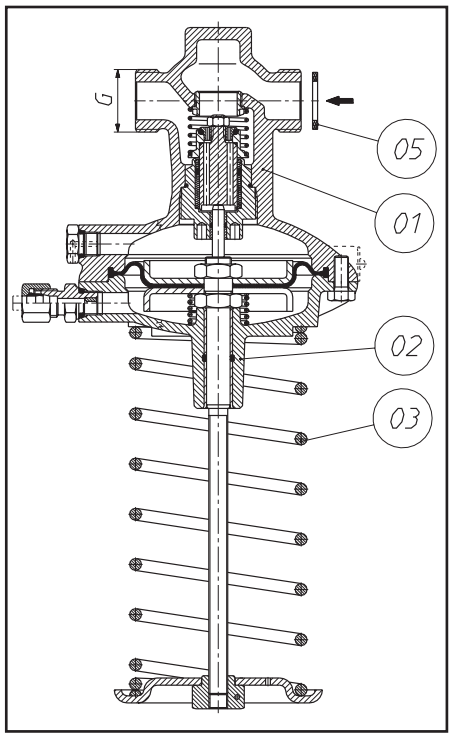
Allowable fluid temperature:
- liquids – +150 [°C]
- non-flammable gases – +80 [°C]

Range of settings – 10…100 [kPa] (green spring)
– 10…200 [kPa] (yellow spring)
– 20…400 [kPa] (red spring)

Leakage class – VI class to PN-EN 60534-4

MATERIALS

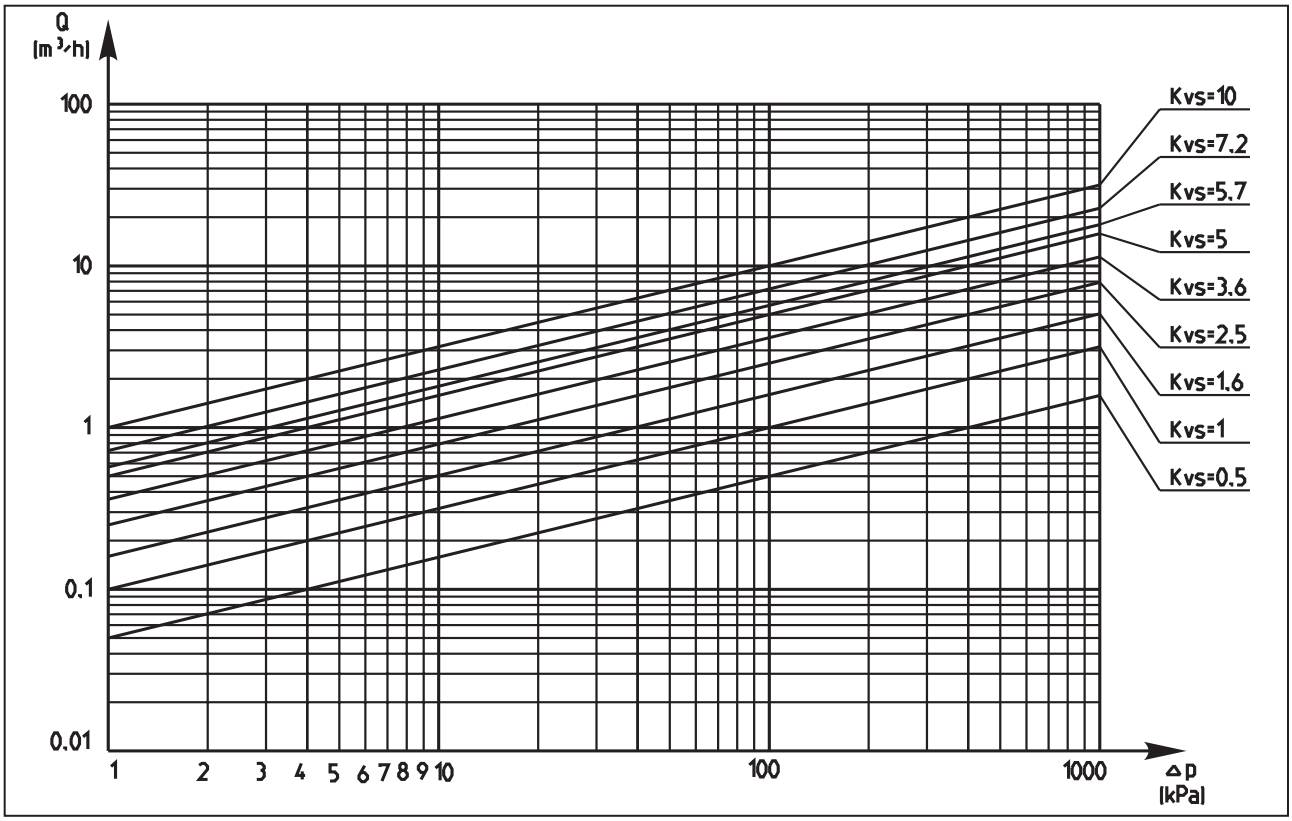
Body, bonnet – spheroidal iron to EN-GJS-400-18LT
Seat – steel K.O.X6CrNiMoTi17-12-2 (1.4571)
Plug – brass CuZn39Pb3
Stem – stainless steel X17CrNi16-2 (1.4057)
Guiding sleeves – steel with PTFE lining
Internal springs – spring stainless steel 12R10
Adjusting spring – spring steel C grade
Diaphragm – EPDM[1)] with polyester cloth
Sealing – EPDM[1)]
Connections – carbon steel for welding S355J2G3 (1.0570)



[1)] - or NBR in case of special options for oils or oil-containing gases.

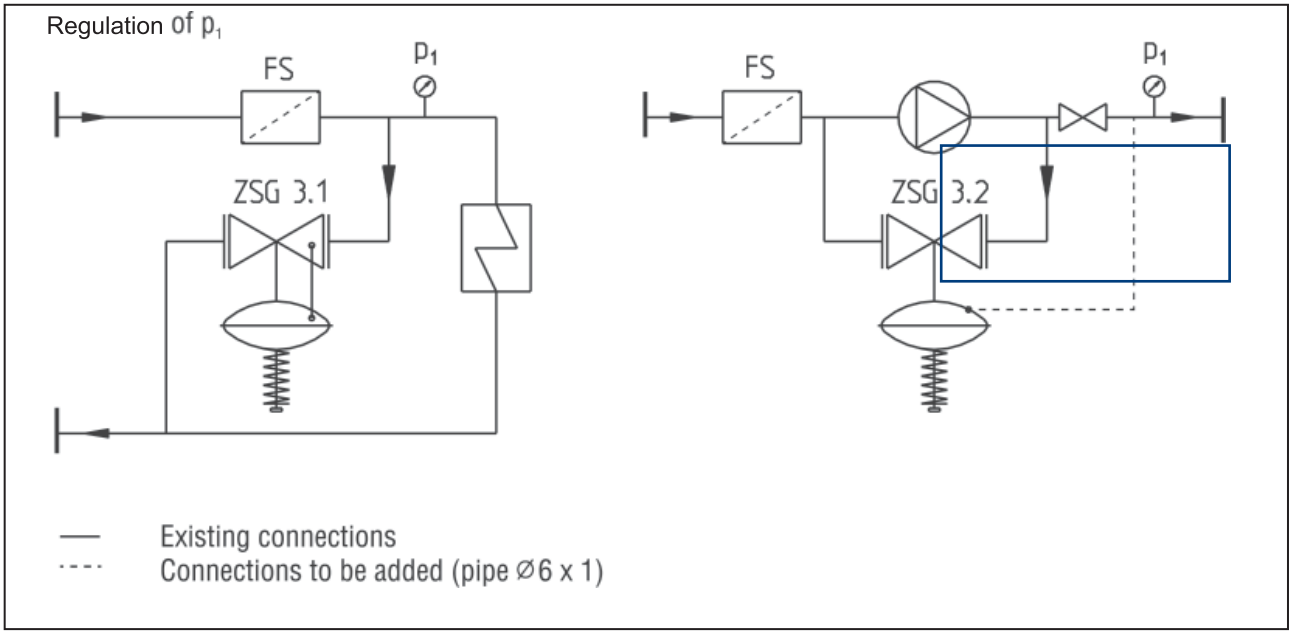
INSTALLATION

The regulator should be installed on a horizontal section of pipeline with the spring downward. Flow direction must match the arrow on the valve body. Application of strainers upstream of regulators is recommended.
To guarantee silent operation of the regulator the flow velocity of utilities in the controlled pipeline should not exceed 3 m/s for liquids and 12 m/s for gases.
Design of the regulator enables fitting of leaden seals to the adjustable parts after the desired settings are set.



Working temerature [°C]		120	135	150
Working pressure [bar]	PN16	16	15,5	15
	PN25	25	24	23,5

APPLICATION EXAMPLE: p_2



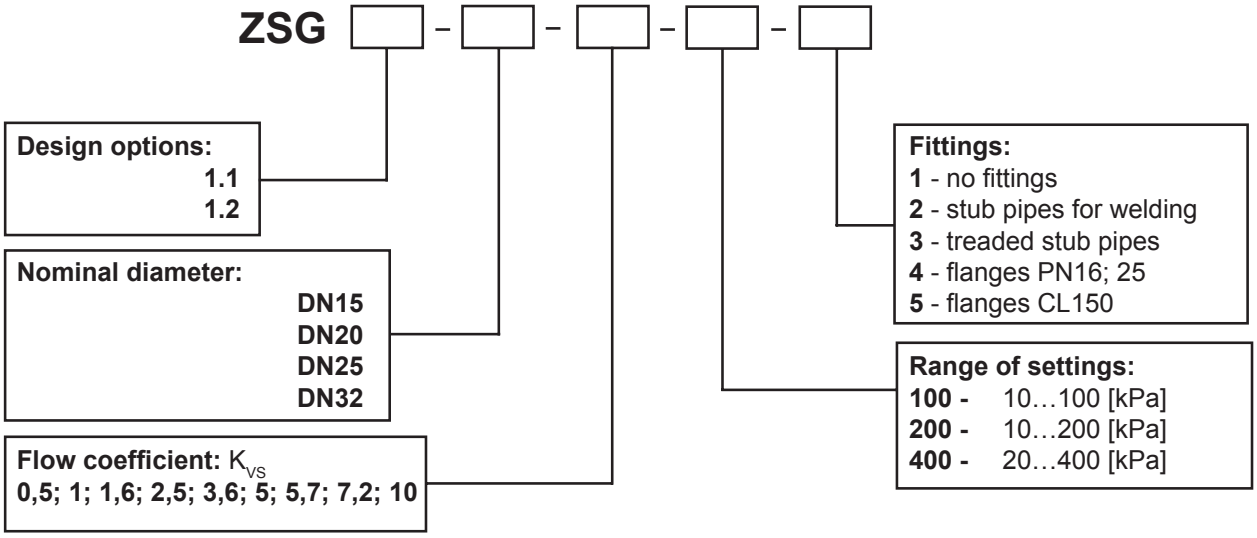
INSTALLATION KIT:

The regulator is delivered along with a factory-made installation kit that includes necessary fittings to connect impulse lines (pipes) ∅6 x 1. Connections for installation on a pipeline (e.g. mating flanges) can be delivered as supplementary fittings (upon a separate order).

Connection type		DN15	DN20	DN25	DN32
Stub pipe for welding		8520144000	8520145000	8520146000	8520147000
Threaded stub pipe		8520148000	8520149000	8520150000	8520151000
Flange	PN16; PN25	8520136000	8520138000	8520140000	8520142000
	CL150	8520137000	8520139000	8520141000	8520143000
Gasket (pos. 05)		8121795000	8121796000	8121797000	8121798000

ORDER PLACEMENT

Orders must contain full name of the product, nominal diameter DN, flow coefficient K_{VS}, range of settings and fittings.



EXAMPLE OF THE PRODUCT CODE:

Pressure regulator type ZSG, with connected impulse pipe; nominal diameter DN25; K_{VS} =3,6; range of settings 20…400 [kPa]; with stub pipes for welding:

ZSG1.1-25-3,6-400-2

Revision: ZSG1/08/2007
Valid until the next revision.