SELF-ACTUATING DIFFERENTIAL PRESSURE REDUCING REGULATORS WITH FLOW REDUCTION **TYPE ZSG 6**

APPLICATIONS:
Regulators are used to control preset pressure difference and to reduce flow in process installations connected to inlet of regulator valve on return of installation. Increase in pressure difference causes valve closure. Regulators are applied in heating systems, in industrial processes with cold and hot (up to 150°C) water and non-flammable gases (up to 80°C), at nominal pressures up to PN25. Using with other media subject to consulting with manufacturer.

CHARACTERISTICS:
- compact and rigid design, small size,
- high control precision,
- wide range of flow ratios K_{VS},
- variety of end connections, easy installation,
- protected against hydraulic overloads,
- guaranteed internal and external tightness,
- low-noise operation,
- high durability,

DESIGN:
Regulator comprises control valve (01) and hydraulic actuator (02), integrated in a single cast structural unit. Regulator value adjuster (03) is situated outside the actuator, while flow reduction flap is integrated with the valve,
Valve - single-ported, with pressure balanced plug and tight shut-off, with flow reduction flap.
Actuator - diaphragm type, high strength diaphragm (effective area 40 cm^2), protected against hydraulic overload.
End connections –welding, threaded or flanged end connections, as per PN, DIN, ISO, for pressure PN16 or PN25, and CL150 (available execution with no end-connections).

OPERATING PRINCIPLE:
Regulator valve is open when no supply. Impulse of higher pressure difference from upstream installation subject to control to actuator chamber from spring side. Impulse of lower pressure difference via internal ducts from behind flap to actuator chamber from valve side. Increase in pressure above the preset value, set by tightening of spring in adjuster (03), causes pro rata closure of valve port until value of controlled pressure difference reaches the preset value. Increase in flow above the preset value, set by flap (04), causes increase in flow resistance and increase in pressure difference in actuator chambers, which in turn causes closure of valve seat until reaching flow value set using the flap.

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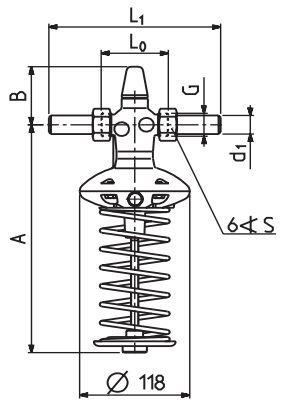
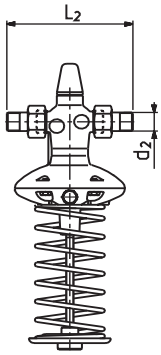
TECHNICAL SPECIFICATIONS:

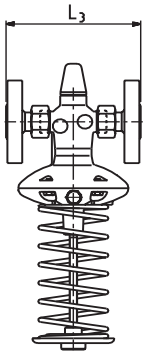
DN nominal diameter		15	20	25	32
K_{VS} flow ratio [m³/h]	full	3,6	5	7,2	10
	reduced	2,5 1,6 1	3,6	5,7	7,2
Noise coefficient, Z		0,6		0,55	
ŚBody connection diameter, G		G 3/4	G 1	G 1 1/4	G 1 3/4
Pipe external diameter, d_1 [mm]		21,3	26,9	33,7	42,4
End external diameter, d_2		R 1/2	R 3/4	R 1	R 1 1/4
Wrench opening, S		32	41	50	60
Body 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]	69	69	71	82



- welding ends



- threaded ends



- flanged ends

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

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

Allowable medium temperature:
- fluids – +150 [°C]
- non-flammable gases – +80 [°C]

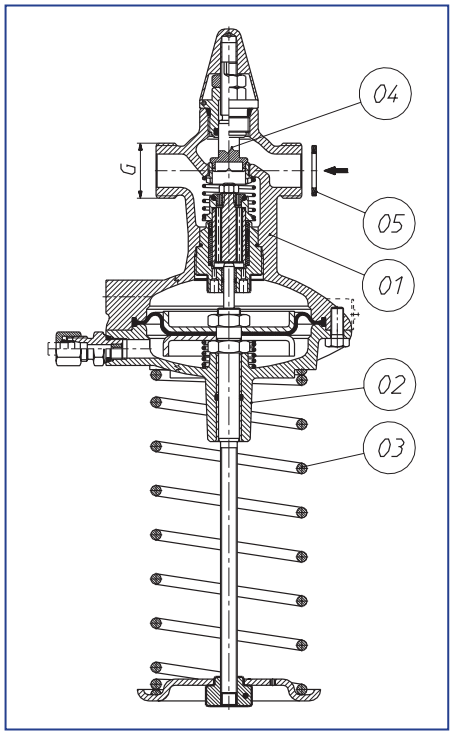
Setting range – 10…100 [kPa] (green spring)
– 10…200 [kPa] (yellow spring)
– 20…400 [kPa] (red spring)

Leakage class – Class VI as per PN-EN 60534-4

MATERIALS

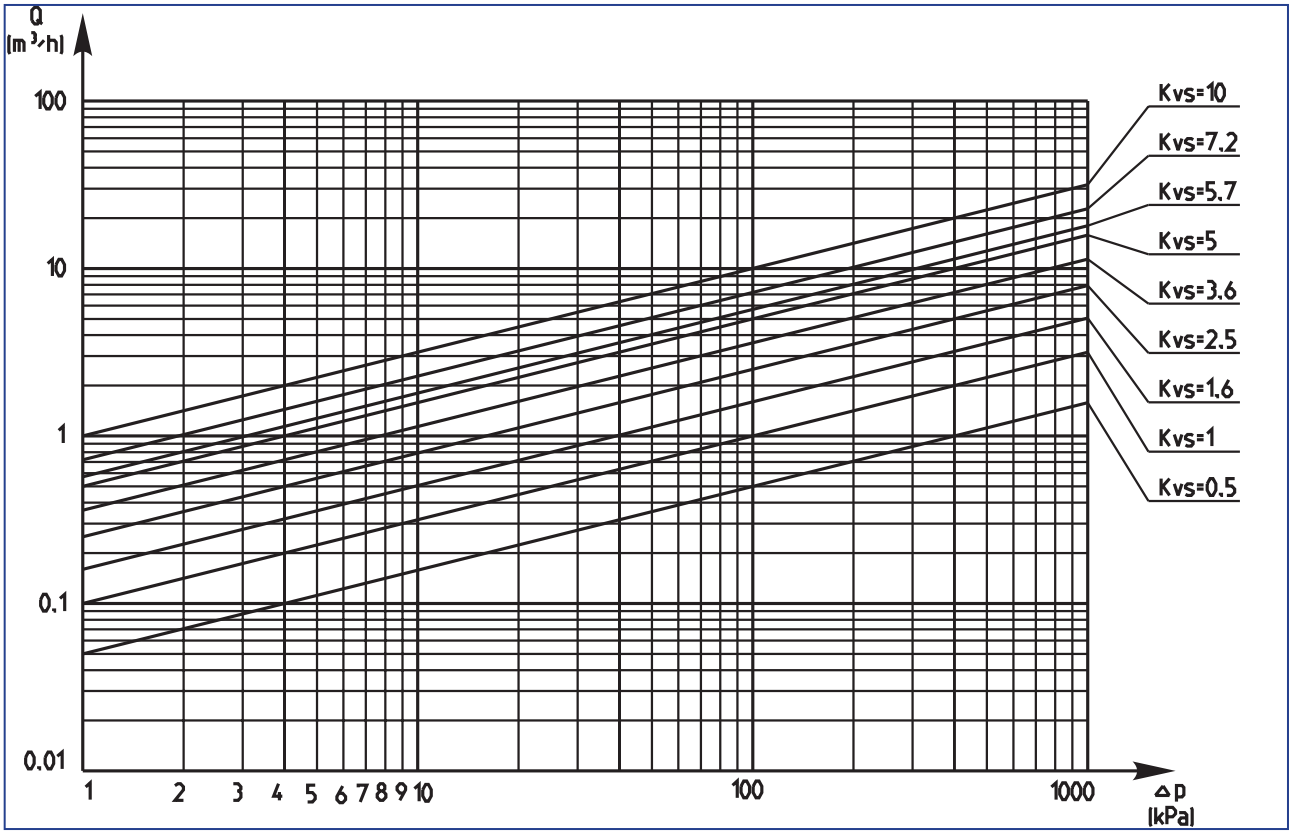
Body, cover – spheroidal iron EN-GJS-400-18LT
Seat – steel K.O.X6CrNiMoTi17-12-2 (1.4571)
Plug – brass CuZn39Pb3
Stem – corrosion-proof steel X17CrNi16-2 (1.4057)
Slide sleeves – PTFE lined steel
Internal springs – stainless spring steel 12R10
Adjuster springs – spring steel C
Diaphragm – EPDM[1)] with polyester fabric
Packing – EPDM[1)]
End connections – weldable carbon steel S355J2G3 (1.0570)

[1)] - special NBR variant for oils or oily gases



INSTALLATION

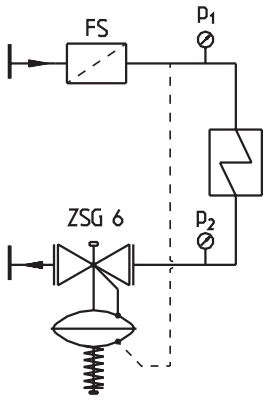
Regulator is to be installed on horizontal pipeline, spring down. Medium flow direction is to conform to arrow on body. Application of strainers upstream regulator is recommended.
For low-noise operation medium flow velocity is not to exceed 3 m/s for liquids and 12 m/s for gases.
Regulator design allows establishment of leaden seal on elements used for setting of preset value.



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

EXAMPLES OF APPLICATION:

Regulation of $\Delta p = p_1 - p_2$



— Existing connections
- - - Connections to be added (pipe Ø 6 x 1)

ACCESSORIES:

Regulator is delivered with respective couplings for impulse ducts (tubes) ∅ 6x1. Additional, optional, accessories include connections to pipeline installation (e.g. counterflanges).

End connection type		DN15	DN20	DN25	DN32
Welding connection		8520144000	8520145000	8520146000	8520147000
Threaded connection		8520148000	8520149000	8520150000	8520151000
Flanged connection	PN16; PN25	8520136000	8520138000	8520140000	8520142000
	CL150	8520137000	8520139000	8520141000	8520143000
Gasket (item 05)		8121795000	8121796000	8121797000	8121798000

ORDERING:

In your order specify product marking, DN nominal diameter, flow ratio K_{VS}, rangeability and accessories.

ZSG 6 – □ – □ – □ – □

Nominal diameter:
DN15
DN20
DN25
DN32

Flow ratio: K_{VS}
0,5; 1; 1,6; 2,5; 3,6; 5; 5,7; 7,2; 10

Accessories:
1 - no end connections
2 - welding connections
3 - threaded connections
4 - flanged connections PN16; 25
5 - flanged connections CL150

Setting range:
100 - 10…100 [kPa]
200 - 10…200 [kPa]
400 - 20…400 [kPa]

EXAMPLE OF MARKING:

Reduced flow differential pressure regulator type ZSG6, nominal diameter DN25; K_{VS} =3,6; setting range 20…400 [kPa], welding connections:

ZSG6-25-3,6-400-2

Revision: ZSG6/08/2007
Valid until the next revision.