



SELF-ACTUATING DIFFERENTIAL PRESSURE REDUCING REGULATORS TYPE ZSN2

APPLICATION AREA:

Regulators ZSN2 are used to control preset pressure in process installations connected to regulator valve outlet. Regulators are applied in heating systems, in industrial processes with cold and hot water, steam, air and non-flammable gases. Using with other media subject to consulting with manufacturer.

DESIGN:

Regulator comprises three, temporary fastened main units: valve (01), actuator (02) and booster (06). Regulator valve single-ported with balanced plug. Flanged connections of valve body with valve face as per PN-EN 1092-1:2006 and PN-EN 1092-2:1999 for PN10; 16; 25; 40 PN-EN 1759-1:2005 for CL150; CL300.

Body length as per:

PN-EN 60534-3-1:2000 – Series 1 for PN10; 16; 25; 40;

Series 37 for CL150; Series 38 for CL300

Valve tightness – bubble (Class VI as per PN-EN 60534-4), tight seat in PTFE or VMQ (ECOSIL).

Diaphragm actuator (diaphragm effective area 160 cm²), with bolted housing and spring, pre-tensioned to 20 [kPa] for DN15...32 valves and to 50 [kPa] for DN40 and DN50 valves, inside. Diaphragm type booster comprises control pressure value adjuster.



VARIANTS:

By corrosion-proofness of actuator components:

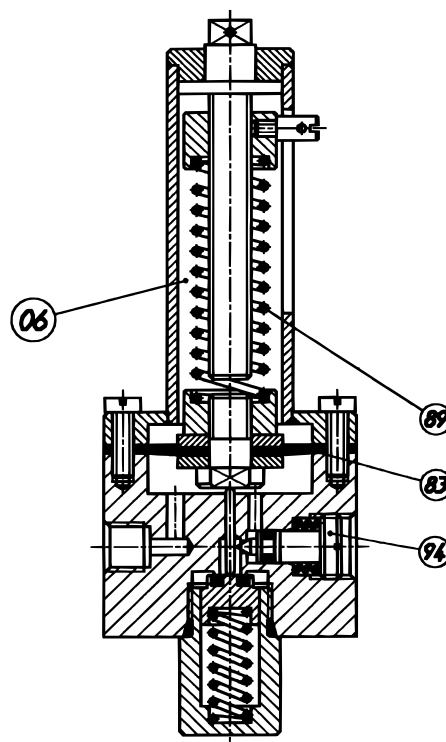
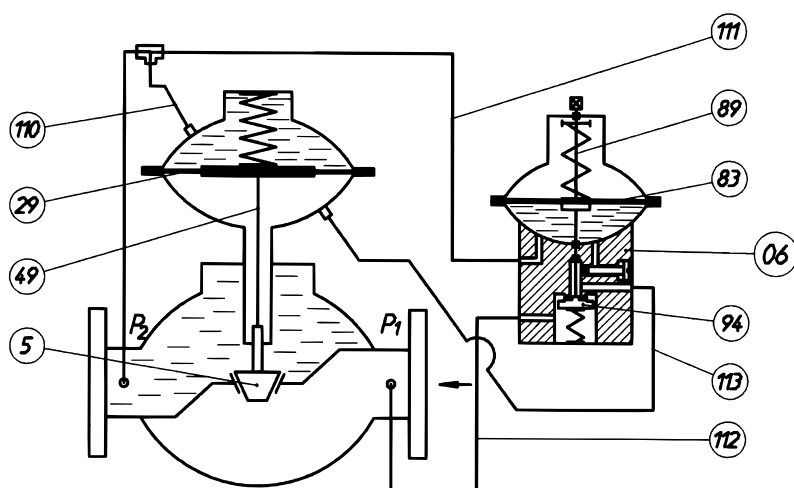
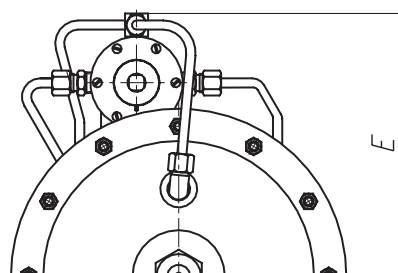
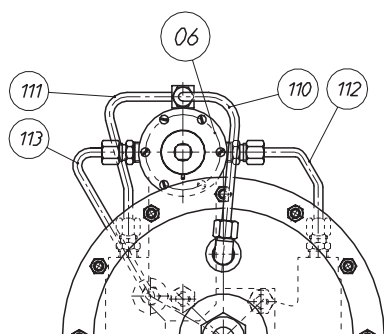
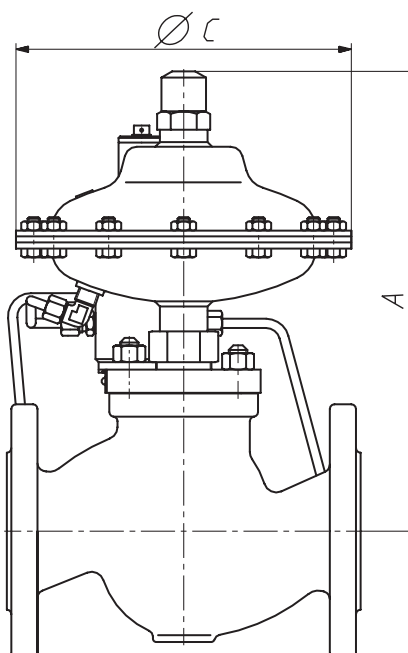
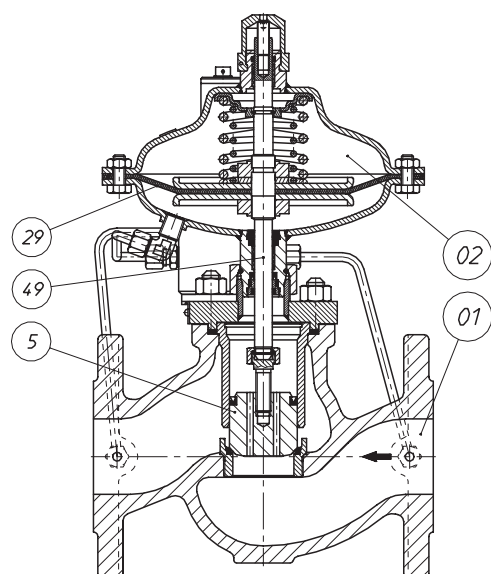
- standard (ZSN 2.1) - carbon steel with protection coatings,
- special (ZSN 2.2) - stainless steel.

OPERATING PRINCIPLE:

Valve is open when no supply. Connection of regulator to system causes its opening. Controlled pressure is fed via impulse duct (110) to actuator (02) chamber above diaphragm (29) and via impulse duct (111) to booster (06) under diaphragm (83). Pressure from upstream valve is transferred via duct (112) to booster, and via pressure divider (94) through duct (113) under actuator diaphragm. Both pressures are collected via impulse tubes (112) and (111) directly from valve inlet and outlet flange. Increase in controlled pressure above preset value, set by tensioning of spring (89) in booster (06), causes increases in pressure in actuator chamber above the diaphragm (29), movement of actuator stem (49) and closure of valve plug (5) until controlled pressure reaches value preset in booster. To ensure reliable operation a minimum pressure difference in valve equal to double value of actuator spring pre-tensioning: 40[kPa] or 100 [kPa].

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

DIMENSIONS AND WEIGHTS



DN	A	C	E	L	Weight
	[mm]				[kg]
15	279	215	165	130	8,8
20				150	9,9
25				160	10,4
32	294		170	180	13,4
40	299			200	15,5
50	304			230	19,3

TECHNICAL SPECIFICATIONS

DN		15	20	25	32	40	50
K _{vs} ¹⁾ [m³/h]	full flow	3,2	5	8	12,5	20	32
	reduced flow	1	1,6	2,5	5	8	12,5
		1,6	2,5	3,2			
		2,5	3,2	5			
Noise coefficient Z		0,65	0,6	0,55		0,45	0,4
Control characteristics		Integrating					
Spring range [kPa]		10...100; 40...400; 100...1000					
Allowed pressure drop in valve [bar]		12					
Minimum pressure drop in valve [bar]		0,4				1	
Valve nominal pressure		valve body in grey iron				PN 16	
		valve body in spheroidal iron				PN 16; PN 25; PN 40	
		valve body in carbon steel and stainless steel				PN 16; PN 25; PN 40	
Maximum medium temperature [°C]		water, steam				150	
		gases				80	

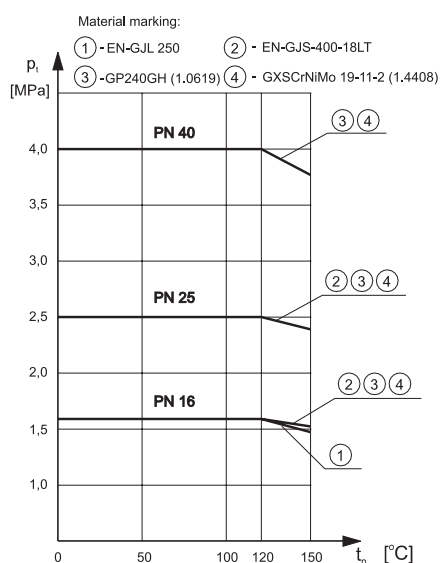
¹⁾ other flow ratios K_{vs} subject to order specification.

MATERIALS as per PN

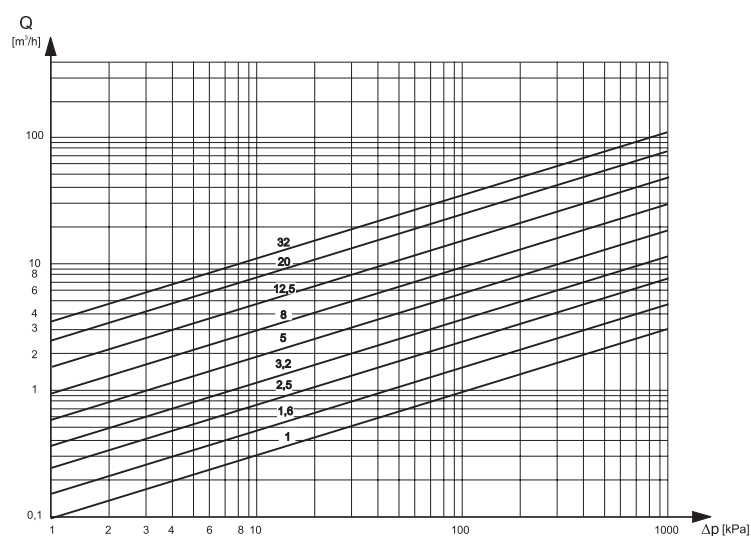
Regulator	ZSN 2.1	ZSN 2.2
VALVE (01)		
Body	grey iron EN-GJL-250 spheroidal iron EN-GJS-400-178LT carbon steel GP240GH (1.0619) stainless steel GX5CrNiMo 19-11-2 (1.4408)	
Plug and seat	X6CrNiMoTi 17-12-2 (1.4571)	
Guide sleeve		
ACTUATOR (02)		
Housing	carbon steel S235JRG2C (1.0122)	stainless steel X6CrNiTi 18-10 (1.4541)
Stem	X17CrNi 16-2 (1.4057)	
Diaphragm	EPDM + polyester fabric ²⁾	
Packing	EPDM ²⁾	
BOOSTER (06)		
Booster components	carbon steel X6CrNiTi 18-10 (1.4541)	
Springs	spring steel 12R10	
Diaphragm	EPDM + polyester fabric ²⁾	
Packings	EPDM ²⁾	

²⁾ other materials, subject to medium type.

NOMINAL PRESSURE, WORKING TEMPERATURE AND WORKING PRESSURE



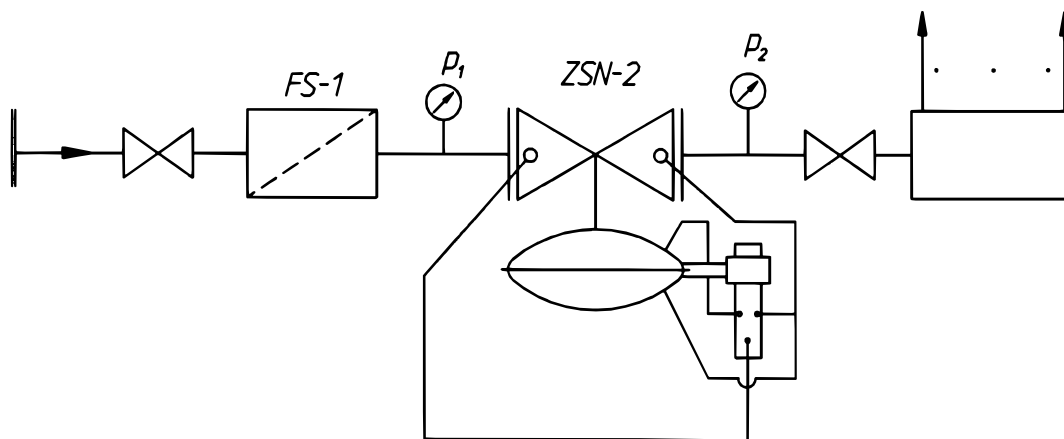
FLOW DIAGRAM FOR WATER



INSTALLATION

Regulator is to be installed on horizontal pipeline. Medium flow direction is to conform to arrow on body. At medium temperature lower than 100°C regulator position is optional, at higher temperatures it is recommended to install regulator with actuator unit (02) down. To ensure reliable operation of regulator apply strainer FS1 upstream.

EXAMPLES OF APPLICATION



ACCESSORIES

Delivered:

- nut and cutting ring for impulse tube,

Optional (ordered separately):

- strainer FS1,
- straight tube connection $\varnothing 6 \times 1$,
- elbow tube connection $\varnothing 6 \times 1$,
- adjustment wrench,

ORDERING

In your order specify type and marking, ZSN 2.1 or ZSN 2.2, DN nominal diameter, PN nominal pressure, flow ratio K_{vs} , body material, spring range.

Example of order:

ZSN 2.1 – DN 25; PN 16; K_{vs} 5; spheroidal iron; 40...100 kPa.