MEDENUS

Gas Pressure Regulation

Gas pressure regulator RS 250 / RS 251

Product information

EN

Table of Contents

List of abbreviations and formula symbols

AC	Accuracy class	PS	Maximum allowable pressure	W_{dsu}	Lower adjustment range (SSV)
AG_o	Upper response pressure group	p_u	Inlet pressure	Δp_{wo}	Min. re-engagement difference between upper response pressure and normal operating pressure
AG_u	Lower response pressure group	Q_n	Standard volumetric flow rate		
HDS	High-pressure screw spindle	RE	Control unit		
K_G	value	BV	Breather valve	Δp_{wu}	Min. re-engagement difference between lower response pressure and normal operating pressure
p_d	Outlet pressure	RSD	Throttle valve		
p_{df}	SRV closing pressure	RSS	Switching valve		
p_{do}	SRV opening pressure	SSV	Safety shut-off valve		
p_{ds}	Setpoint of the response pressure	SRV	Safety relief valve	ρ_n	Gas density
		SG	Closing pressure group		
$p_{ds\,o}$	Upper SSV response pressure	t_{Gas}	Gas inlet temperature		
$p_{ds\,u}$	Lower SSV response pressure	VS	Valve seat		
		w_d	Outlet gas velocity		
$p_{f,max}$	Maximum closing pressure	w_u	Inlet gas velocity		
		W_{dso}	Upper adjustment range (SSV)		

*) KG value for natural gas: d = 0,64 (ρ_n = 0,83 kg/m³), t_u = 15° C

Application, Characteristics, Technical Data

Application

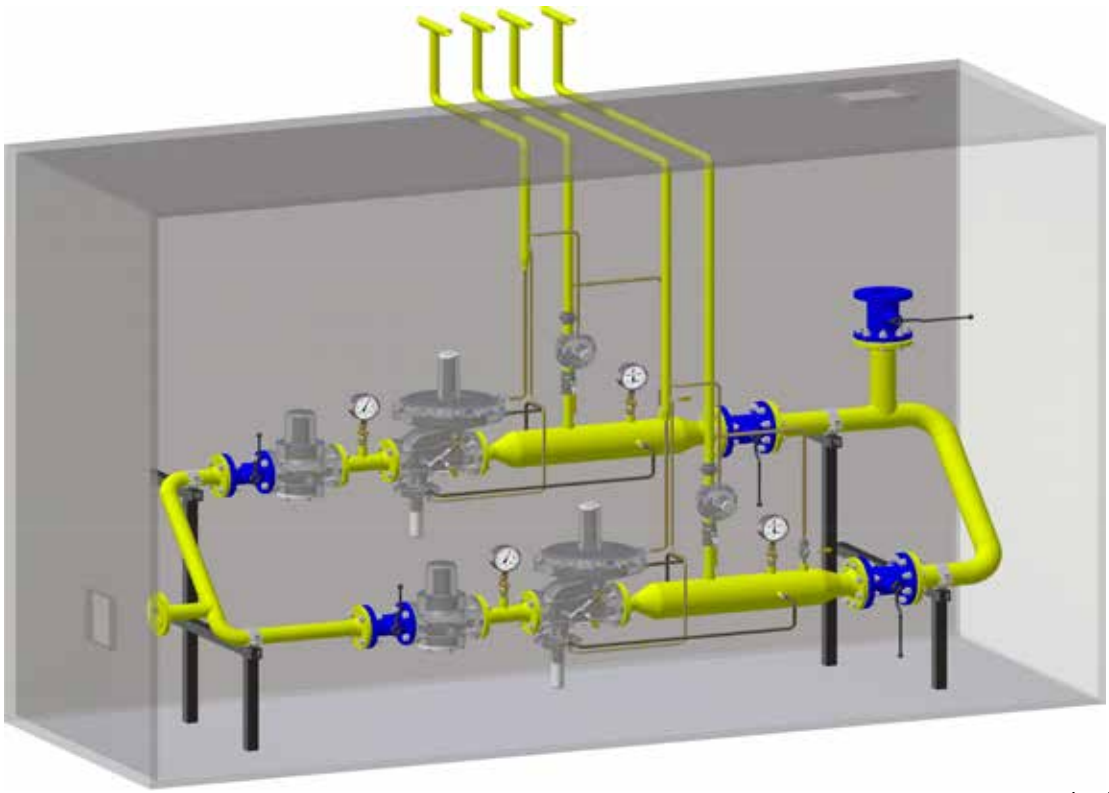
Gas pressure regulator (GDR), direct-acting (operating without auxiliary power), for systems acc. to DVGW - work sheet G 491 (A) and G 600 (A) (TRGI)
Particularly suitable for dynamic regulation sections (e.g. gas fireplaces, natural gas distribution plants, burner, gas engines)
Can be used as an equipment component on gas consumption facilities as defined in EC Directive (90/396/EEC)
Can be used for the gases defined in DVGW - work sheet G 260 / G 262 and neutral non-aggressive gases. (other gases on request)

Features

- Integral pressure-tight model (IS)
- Gas pressure regulator with integrated SSV
- Easy maintenance through replaceable SSV functional units (modular design)
- SSV functional class, optionally A or B
- outdoor version as standard

Type of model (options)

- Oxygen model
- Without SSV
- With noise reduction
- With SSV manual release
- With SSV - electromagnetic remote release when power is applied or in case of power failure
- With electric position indicator SSV 'Closed' via inductive initiator or via Reed contact
- Control unit with integrated leakage gas SRV or safety diaphragm
- With BV breather valve for SSV
- With throttle valve (RSD) for impulse line of the regulator
- Coating with epoxy resin in RAL colours



double gas train

Technical Data

Type	RS 250 / RS 251
Model	Integral pressure-tight (IS)
Max. allowable pressure PS	8 bar
Max. inlet pressure $p_{u,max}$	**8 bar**
Nominal size	RS 250: DN 25, DN 50, DN 80, DN 100, DN 150, DN 200 RS 251: DN 50, DN 80, DN 100
Connection type	DIN EN 1092 - PN 16 flanges ASME - B16.5 flanges Class 150 RF
Material Housing / actuator housing/ Control device housing	Al cast alloy*
Temperature range, Class 2 (operating/ambient temperature)	-20°C to +60°C
Closing pressure zone group	**SZ 2.5**

Gas pressure regulator

Accuracy class AC and closing pressure group SG at the outlet pressure range p_d	AC	SG
18 mbar to 100 mbar	10	20
> 100 mbar to 500 mbar	5	10
> 500 mbar to 1500 mbar	2.5	10
>1000 mbar (only RE 205 / 275)	5	10

Safety shut-off valve

Upper response pressure group AG_o in command area w_{dso}	AG_o
50 mbar to 100 mbar	10
> 100 mbar to 500 mbar	5
> 500 mbar	2.5

Lower response pressure AG_u in command area w_{dsu}	AG_U
10 mbar to 30 mbar	20
> 30 mbar to 50 mbar	10
> 50 mbar	5

Function, Strength and Tightness	DIN EN 334 and DIN EN 14382
CE mark to PED/ PIN number	CE-0085-AQ0882 / CE-0085-AQ0883
Ex protection	The mechanical parts of the device do not have any potential ignition sources of their own and therefore do not fall within the scope of ATEX 95 (94/9/EC). Electrical components fitted to the device comply with the ATEX requirements.

*) RS 250: DN 50/ DN 80/ DN 100 housing also available in spheroidal cast iron (GJS)

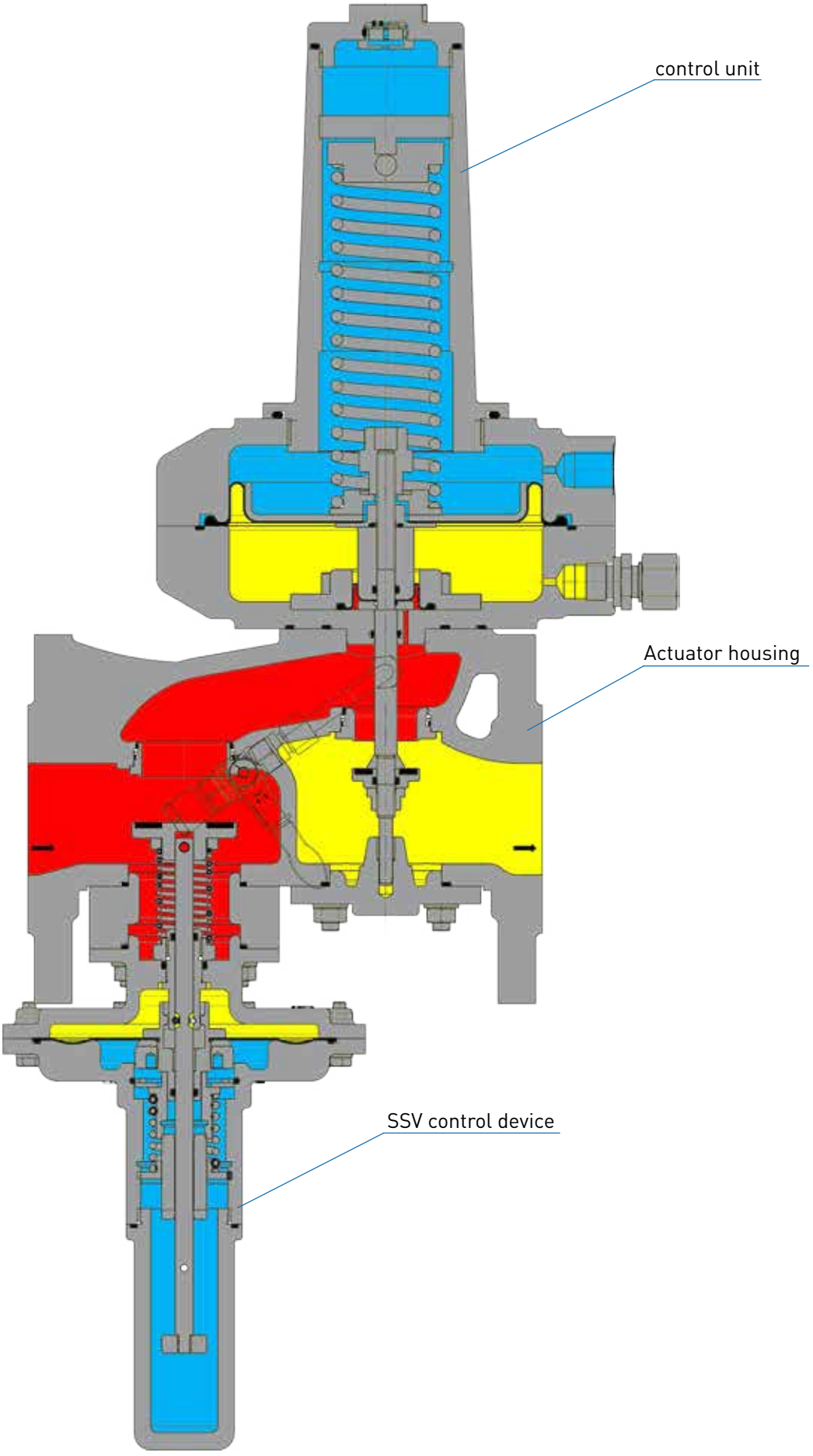
**) Corrosivity category according to DIN EN ISO 12944-2.
The categories C1 to C5-I including guaranteed without additional coatings.
For the category C5-M a coating with epoxy resin is recommended.

Application, Characteristics, Technical Data

Design and function

The spring-loaded gas pressure regulators RS 250 / RS 251 have the function of keeping the outlet pressure of a gaseous medium constant within allowable limit values, independently of the effect of interferences, such as changes in the inlet pressure and/or in the gas train, in the connected regulation section on the outlet side. The gas pressure regulator is composed of the actuator housing and the 'control unit plus actuator' and 'SSV control device/switching device plus actuator' functional units.
The actuator for the control unit can be produced in various valve seat diameters to suit different nominal size. The valve seat models are pre-pressure-compensated and can, if required, be equipped with noise reduction.
The gas flows through the actuator housing in the direction of the arrow. The external measurement line port is used to pass the outlet pressure to be regulated to the bottom of the main diaphragm of the control unit. It compares the actual value with the command variable preset by the force of the setpoint spring. The setpoint required in each case is set via the setting screw. Any deviation from the setpoint is transmitted by the screw spindle to the actuator, which is adjusted such that the actual value is adjusted to the setpoint. In case of zero tap, the actuator will close tight, causing the closing pressure to be established. Optionally, the control unit can be equipped with a leakage gas SRV or a safety diaphragm. In the model with safety diaphragm, the safety diaphragm is located above the main diaphragm. When the main diaphragm ruptures, the safety diaphragm makes contact with the top cover of the control unitand prevents any inadmissible escape of gas into the surrounding atmosphere. In case of inadmissible overpressure or lack of gas in the regulating section, the actuator of the safety shut-off valve arranged in the same housing on the inlet side will shut off the gas flow. To this end, the outlet pressure to be monitored is passed on to the SSV control device via a separate measurement line. As a function of the change in pressure, the SSV diaphragm in the controller is raised or lowered. When the outlet pressure in the regulating section exceeds or falls below a certain response pressure, the switch socket connected to the SSV diaphragm will move to the corresponding disengaging position, the balls of the engaging mechanism will release the SSV screw spindle, and the closing spring will press the SSV valve plate against the valve seat. The SSV actuator shuts off the gas flow gas-tight. The SSV can only be opened by hand and engaged in the open position. To do so, the outlet pressure at the measuring point must be lowered below the upper response pressure or raised above the lower response pressure by at least the re-engaging differential amount (Δp).

The SSV can, except where otherwise stipulated in specific national legislation, be used in either functional class A (with diaphragm rupture protection) and B (without diaphragm rupture protection).
There is also the option of using a remote indication for the SSV position 'CLOSED' and a manual and remote release when power is applied or in case of power failure.



Options

Safety diaphragm

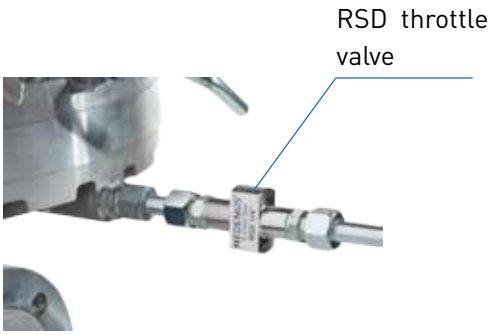
The safety diaphragm design provides a safety diaphragm above the main diaphragm. In case the main diaphragm breaks, the safety diaphragm presses against the upper diaphragm cover and prevents leaking into the atmosphere.

Noise reduction

The noise reduction is made of metal foam and reduces noise of the gas pressure regulator, caused by flow velocity up to -15 dB (± 3 dB).

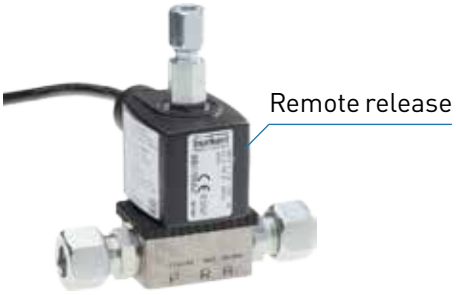
RSD throttle valve

The RSD is a throttle valve which regulates the volume flow within the measuring line from the outside. This is achieved by a continously adjustable cross sectional narrowing. The adjustment is made by means of an Allen key (4mm).



SAV remote release

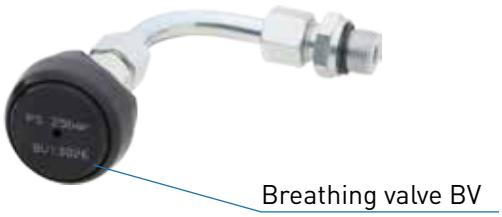
The direct-acting solenoid valve serves as a electromagnetic remote release for closing the safety shut-off valve in case of power flow and power failure.



Breathing valve BV

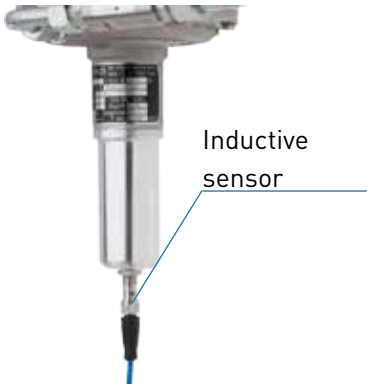
The breathing valve BV serves to protect the room of installation against inadmissible gas leakage from therenting space of safety shut-off valves.

It is also an alternative to the cost- and work intensive installation of breathing pipes.



Signal transmitter / Inductive Sensor

Signal and inductive sensors are used to monitor the position (closed or open position) of the safety shut-off valve by remote display.



Application, Characteristics, Technical Data

K_G* value and control units

	RS 250						RS 251		
Nominal size	DN 25	DN 50	DN 80	DN 100	DN 150	DN 200	DN 50	DN 80	DN 100
control unit Ø / Valve seat Ø	205 320	205 320	205 275 390	205 275 390	275-2 385 485	275-2 385 485	205 275 390	275-2 385 485	275-2 385 485
17.5 mm	200	220							
27.5 mm	420	500	550	600			550		
32.5 mm		750	850	900			750		
42.5 mm			1,450	1,500	1,600		1,250	1,500	1,500
52.5 mm				1,800	2,000		1,700	1,800	1,850
65.0 mm					3,500			2,600	3,200
85.0 mm					4,600			3,500	4,300
95.0 mm					5,800	6,100			4,800
115.0 mm						8,950			
Connection type	DIN EN 1092 - PN16								
	ASME B 16.5 - Class 150								

Integrated safety relief valve (Leakage gas SRV)

Spring no.	control unit	Opening pressure** Setting via p_{ds} [mbar]
FM 404	275	**15** + 5
		30 +10
		60 +15
		90 +15
	320	**15** + 5
		30 +10
		60 +15
FM 405		**90** +15
FM 404	385 / 390	**15** + 5
		30 +10
FM 405		**60** +15
		90 +15
FM 404	485	**15** + 5
FM 405		**30** +10
FD 919		**60** +15
		90 +15

*) KG value for natural gas: d = 0.64 (ρ_n = 0.83 kg/m³), t_u = 15°C

**) When selecting the opening pressure for the leakage gas SRV, the value must not drop below the closing pressure of the setpoint setting!

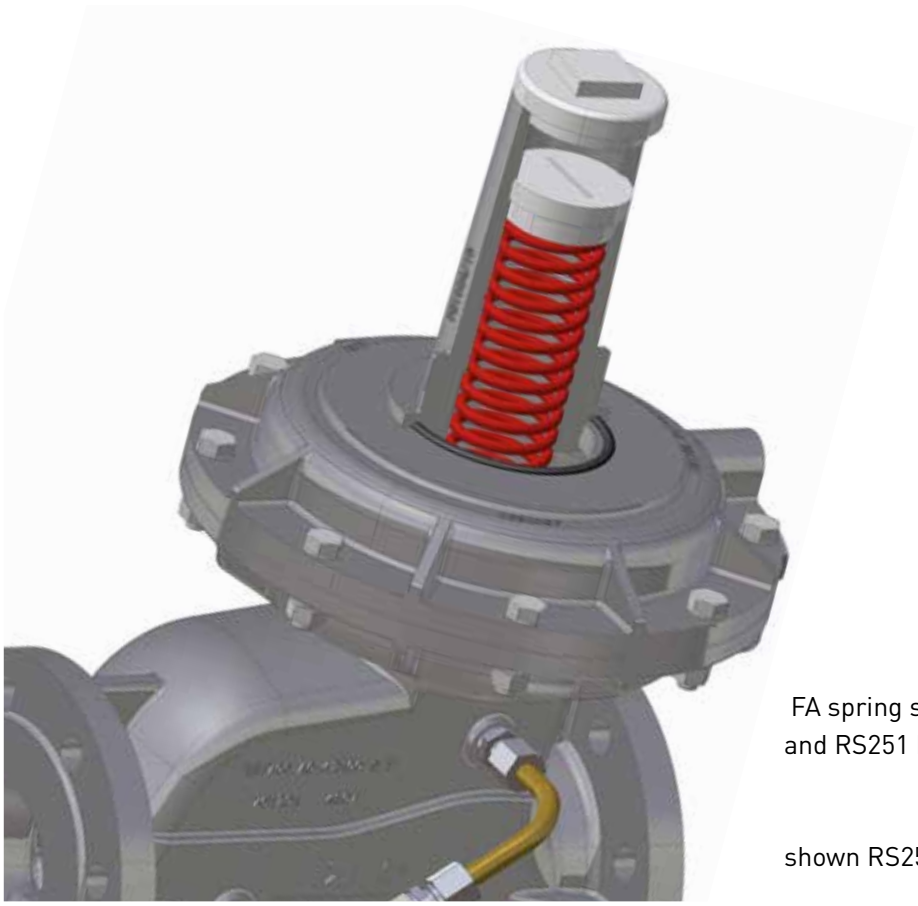
Accuracy class AC / Closing pressure group SG

	control units						
Outlet pressure range p_d	205	275	275-2	320	385	390	485
18 mbar to 100 mbar				10 / 20	10 / 20	10 / 20	5 / 10
90 mbar to 500 mbar		5 / 10					
100 mbar to 500 mbar				5 / 10	5 / 10	5 / 10	5 / 10
350 mbar to 500 mbar			10 / 20				
500 mbar to 1000 mbar	10 / 20						
> 500 mbar		2.5 / 10	5 / 10	2.5 / 10	2.5 / 10	2.5 / 10	
> 1000 mbar	5 / 10						

Application, Characteristics, Technical Data

Control unit setpoint spring table

Specific command range W_{ds} [mbar]				Spring data	
RE 205	RE 275	RE 320	RE 390	Spring no.	Colour [RAL]
36 - 39	23 - 25	10 - 12	8 - 10	FA 01	blank
38 - 45	24 - 28	11 - 13	9 - 12	FA 02	9006
44 - 52	27 - 31	14 - 18	11 - 13	FA 03	5015
51 - 64	30 - 37	17 - 22	12 - 15	FA 04	4002
62 - 81	35 - 46	21 - 29	14 - 19	FA 05	7037
78 - 107	43 - 59	28 - 39	18 - 24	FA 06	9005
103 - 147	55 - 80	38 - 54	23 - 32	FA 07	3020
140 - 205	73 - 110	53 - 77	31 - 45	FA 08	9010
195 - 295	100 - 156	76 - 111	42 - 64	FA 09	7016
280 - 430	141 - 225	110 - 166	59 - 94	FA 10	6010
419 - 653	208 - 339	165 - 250	88 - 142	FA 11	2002
595 - 935	293 - 484	239 - 361	124 - 203	FA 12*	7035
819 - 1408	436 - 726	360 - 544	185 - 305	FA 13*	5010
1245 - 1976	607 - 1017	506 - 765	258 - 428	FA 14*	1028
1212 - 2553	699 - 1333	535 - 978	297 - 568	FA 15*	6018
1330 - 3012	785 - 1580	602 - 1157	333 - 673	FA 16*	3020



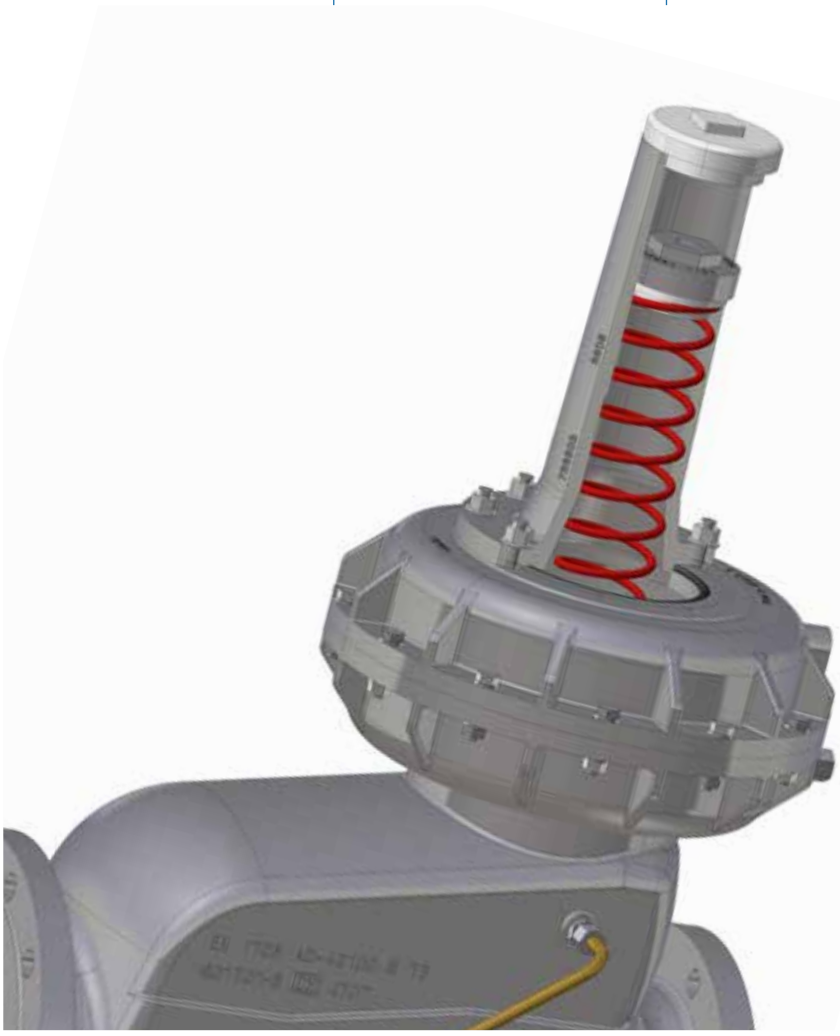
FA spring series for RS250 DN 025 - DN 100 and RS251 DN 050

shown RS250 DN 080 with FA11

*) with high-pressure screw spindle (HDS shown on p.14)

Control unit setpoint spring table

Specific command range W_{ds} [mbar]			Spring data	
RE 275-2	RE 385-2	RE 485	Spring no.	Colour [RAL]
59 - 69	31 - 35	19 - 22	FB 701	6018
68 - 83	34 - 41	21 - 25	FB 702	9006
80 - 105	40 - 51	24 - 31	FB 703	5015
96 - 127	50 -61	28 - 36	FB 704	4002
112 - 156	60 - 77	33 - 44	FB 705	7037
146 - 207	76 - 100	41 - 56	FB 706	9005
184 - 266	98 - 127	51 - 71	FB 707	3020
238 - 358	125 - 167	65 - 94	FB 708	9010
302 - 450	165 - 215	82 - 118	FB 709	7016
397 - 596	212 - 285	105 - 155	FB 710	6010
542 - 814	280 - 390	140 - 209	FB 711	2002
742 - 1078	385 - 520	188 - 275	FB 712	7035
977 - 1442	515 - 671	246 - 369	FB 713*	5010
1245 - 1878	661 - 873	311 - 479	FB 714*	1028
1547 - 2469	712 - 1186	393 - 618	FB 715*	6018
2136 - 3008	975 - 1514	517 - 752	FB 716*	3020



FB spring series for RS250 DN 150 - DN 200 and RS251 DN 080 - DN 100

shown RS250 DN 200 with FB707

Setpoint spring table - SSV

		MD small ball lock up to $W_{ds\,o}$ 300mbar				**MD-R** small ball lock up to $W_{ds\,o}$ 3500mbar				**HD** small ball lock up to $W_{ds\,o}$ 14000mbar			
		RS 254: DN 25 - 100 / RS 255: DN 50 - 80											
Spring data		lower response pressure		upper response pressure		lower response pressure		upper response pressure		lower response pressure		upper response pressure	
Feder Nr.	Colour [RAL]	$W_{ds\,u}$ [mbar]	Δp_{wu} [mbar]	w_{dso} [mbar]	Δp_{wo} [mbar]	$W_{ds\,u}$ [mbar]	Δp_{wu} [mbar]	w_{dso} [mbar]	Δp_{wo} [mbar]	$W_{ds\,u}$ [mbar]	Δp_{wu} [mbar]	w_{dso} [mbar]	Δp_{wo} [mbar]
FE 900	1028					0 - 10	50			0 - 38	500		
FE 901 VA	2002					6 - 30*	50			20 - 120*	500		
FE 902 VA	6010	0 - 12*	20			24 - 74	50			120 - 310*	500		
FE 903	5015	4 - 14	20			36 - 78	50			160 - 316	500		
FE 904 VA	9005	8 - 18	20			58 - 110	50			200 - 400	500		
FE 905 VA	9010	18 - 42	20			110 - 160	50			416 - 650	500		
FE 906	4002	48 - 70	20			162 - 250	50			560 - 940	500		
FD 910	1028			35 - 45	20			100 - 135	50			0 - 38	300
FD 911	2002			45 - 80	20			130 - 250	50			20 - 120	300
FD 912	6010			70 - 120	20			220 - 360	50			120 - 310	300
FD 913	5015			100 - 170	20			320 - 510	50			160 - 316	300
FD 914	9005			140 - 230	20			440 - 700	50			200 - 400	300
FD 915	9010			210 - 370	20			630 - 1130	50			416 - 650	300
FD 916	3020			330 - 570	20			1060 - 1750	50			560 - 940	300
FD 917	5010			460 - 830	20			1420 - 2520	50			4700 - 7300	300
FD 918	9006			650 - 1080	20			1850 - 3200	50			7300 - 12100	300
FD 919	4002			980 - 1500	20			2800 - 4600	50			11700 - 14000	300

Setpoint spring table - SSV

		MD big ball lock up to $W_{ds\,o}$ 300mbar				**MD-R** big ball lock up to $W_{ds\,o}$ 3500mbar				**HD** big ball lock up to $W_{ds\,o}$ 14000mbar			
		RS 254: DN 150 - 200 / RS 255: DN 100											
Spring data		lower response pressure		upper response pressure		lower response pressure		upper response pressure		lower response pressure		upper response pressure	
Feder Nr.	Colour [RAL]	$W_{ds\,u}$ [mbar]	Δp_{wu} [mbar]	w_{dso} [mbar]	Δp_{wo} [mbar]	$W_{ds\,u}$ [mbar]	Δp_{wu} [mbar]	w_{dso} [mbar]	Δp_{wo} [mbar]	$W_{ds\,u}$ [mbar]	Δp_{wu} [mbar]	w_{dso} [mbar]	Δp_{wo} [mbar]
FM 400	1028	10 - 40*	20			10 - 180*	50			0 - 250	500		
FM 402	6010	35 - 115	20			155 - 380	50			150 - 1000*	500		
FM 404	9005	60 - 245	20			200 - 950	50			650 - 2050	500		
FL 412	6010			40 - 180	20			145 - 670	50			380 - 1400	300
FL 413	5015			70 - 340	20			270 - 1230	50			800 - 2800	300
FL 415	9010							1200 - 4500	50			3200 - 5500	300
FL 417	4010											4500 - 14000	300

Determining the upper response pressure

Outlet pressure P_d (mbar)	Upper response pressure W_{dso} ***
⩽200	P_d +100 mbar
>200 - ⩽800	P_d x 1.5
>800 - ⩽1600	P_d x 1.3
>1600	P_d +500 mbar

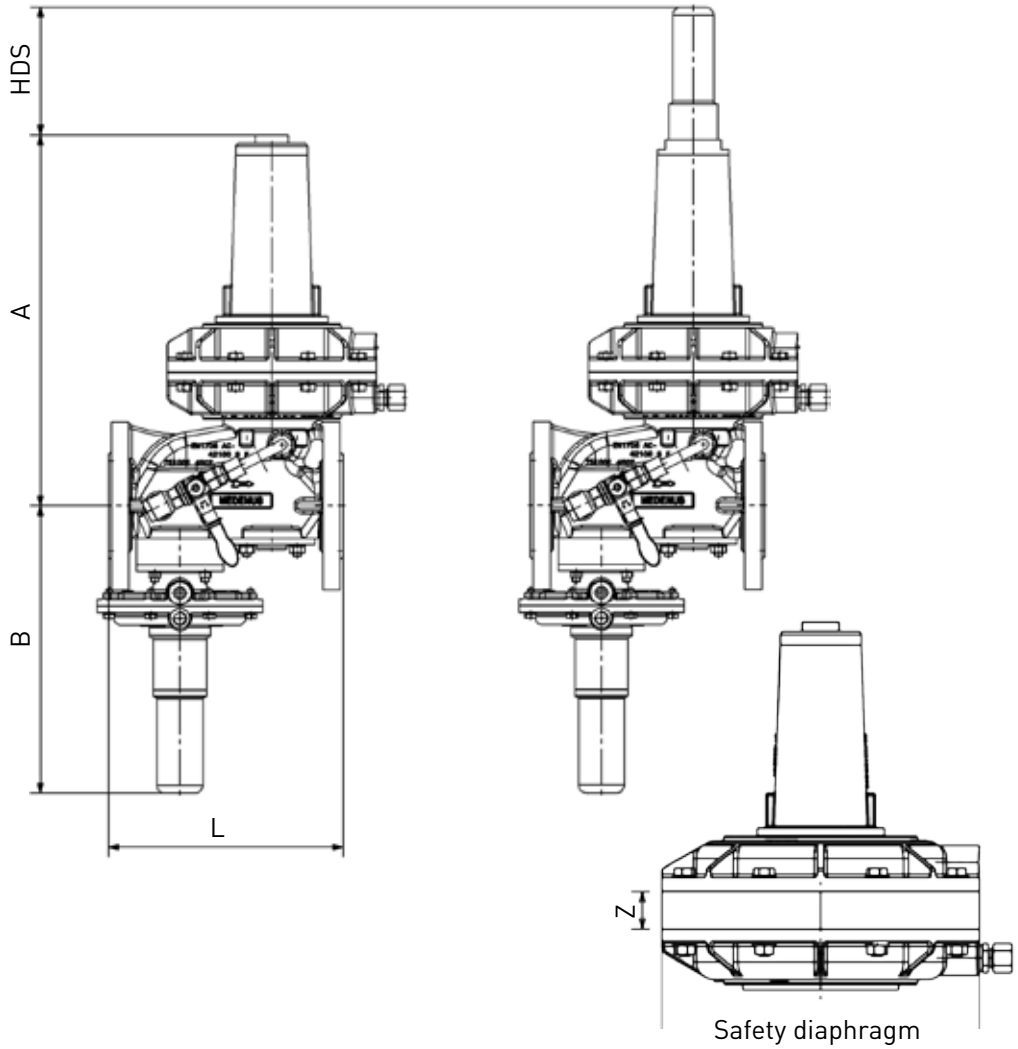
*) if possible not greater than 450 mbar

**) If the control device is set up for simultaneous monitoring of upper and lower response pressures, the difference between the setpoints for the upper and lower response pressures (p_{dso} and p_{dsu}) should be at least 10% greater than the total of values given for Δp_{wo} and Δp_{wu}.

***) The upper response pressure is rounded up to full tens, for example 251 mbar-> 260 mbar

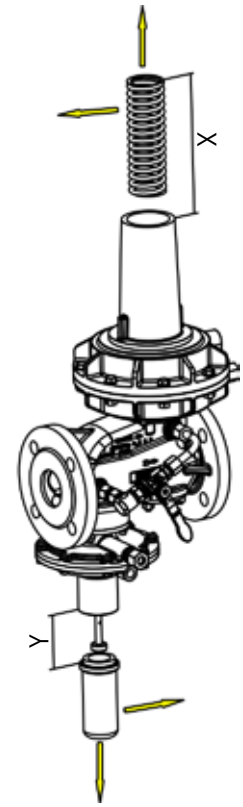
Dimensions, Connection and Weight

Dimensional drawing



Safety diaphragm

Dismounting dimensions for springs / HDS



Reactivation of SSV

Installation situation

Dimensions and weight

Dimensions \ Nominal size	RE	RS 250						RS 251		
		DN 25	DN 50	DN 80	DN 100	DN 150	DN 200	DN 50	DN 80	DN 100
A [mm]	205	346	364	406	421	-	-	406	-	-
	275	-	-	406	421	730	799	406	658	730
	320	328	346	-	-	-	-	-	-	-
	385/390	-	-	406	421	716	785	406	644	716
	485	-	-	-	-	722	791	-	644	722
HDS [mm]		125	125	125	125	205	205	125	205	205
B [mm]		270	282	305	315	386	400	305	311	386
L* [mm]		230	230	310	350	480	600	310	410	480
X [mm]		260	260	260	260	410	410	260	410	410
Y [mm]		100	100	100	100	150	150	100	150	150
Safety diaphragm - SM Z [mm]		32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
Weight [kg]	205	11.5	13	22	23	-	-	16	-	-
	275	-	-	24	25	52	82	19	37	52
	320	13.5	15	-	-	-	-	22	-	-
	385/390	-	-	28	29	58	88	-	42	58
	485	-	-	-	-	68	98	-	-	68
HDS - Weight [kg]		0.6	0.6	0.6	0.6	1.6	1.6	0.6	1.6	1.6
Safety diaphragm - SM - Weight [kg]	205	2	2	2	2	-	-	2	-	-
	275	-	-	3	3	3.3	3.3	3	3.3	3.3
	320	3	3	-	-	-	-	-	-	-
	385/390	-	-	5	5	6	6	5	6	6
Connection	DIN EN 1092 - PN16									
	ASME B 16.5 - Class 150									

Example:

RS250/050/320 with HDS and safety diaphragm

Weight (regulator + HDS + SM): 15 kg + 0.6 kg + 3 kg = 18.6 kg
Dimensions (A + HDS + SM): 346 mm + 125 mm + 32.5 mm = 503.5 mm

* Alternatively, for the RS 250 for nominal sizes of DN 50, DN 80 and DN 100 the housings are also available on request in spheroidal cast iron (GJS)

Dimensions, Connection and Weight

RS 250: Connection of the measuring lines and breather lines

Nominal size	contol unit		SSV control device / switching device	
	Measuring line	Breather line	Measuring line	Breather line
DN 025	Connection* for: Tube 12 x 1.5 (thread G 3/8)		Connection* for: tube 12 x 1.5 (thread G 1/4)	
DN 050				
DN 080				
DN 100				
DN 150			Connection* for: tube 12 x 1.5 (thread G 3/8)	
DN 200				

RS 251: Connection of the measuring lines and breather lines

Nominal size	control unit		SSV control device / switching device	
	Measuring line	Breather line	Measuring line	Breather line
DN 050	Connection* for: Tube 12 x 1.5 (thread G 3/8)		Connection* for: tube 12 x 1.5 (thread G 1/4)	
DN 080				
DN 100			Connection* for: tube 12 x 1.5 (thread G 3/8)	

Note: Observe the following publications in relation to installation, start-up and maintenance:
DVGW - work sheets G 491 and G 600
Operating and Maintenance Instructions RS 250 /251

The gas pressure regulators RS 250 / 251 shall be installed in the pipeline preferably in horizontal position with vertical position of the control unit spring cap. For all nominal sizes, the direction of flow is indicated by an arrow on the housing.

Selection

Calculation of the required K_G value

$p_d / p_u > 0.5$
K_G value at
a sub-critical pressure ratio
$K_G = Q_n / \sqrt{p_d \cdot (p_u - p_d)}$

$p_d / p_u \leq 0.5$
K_G value at
a super-critical pressure ratio
$K_G = 2 \bullet Q_n / p_u$

Note: all calculated pressures are absolute pressures.

Device selection

The device is selected on the basis of its K_G value from the table of flow rate coefficients (page 8)

Note: For spring-loaded devices, a capacity reserve of 10-20% is recommended in order to comply with the accuracies given.

Example:

$p_{u\ min}$ 5.0 bar / $p_{u\ max}$ 8.0 bar
$p_{d\ min}$ 0.3 bar / $p_{d\ max}$ 0.5 bar
$Q_{n\ min}$ 800 m³/h / $Q_{n\ max}$ 1500 m³/h

1.5 bar / 6 bar = 0.25 < 0.5
→ Supercritical pressure ratio
$K_G = 2 \bullet 1500 / 6 = 500$ ((m³/h)/bar)

RS 250 DN 50 VS 32.5
K_G value: 750 (m³/h)/bar

Note: To obtain a more accurate design configuration of our gas pressure regulators, you can use our configurator, on our homepage medenus.de, under Service. (medenus.de/de/service/konfigurator.html)

*) Threaded pipe connections to DIN EN ISO 8434-1 (DIN 2353)

Selection

Device selection

For the small load Q_{min} with SZ this yields 2.5: $Q_{min} = 0.025 \bullet K_G \bullet p_{u\,max}$
Note: Small load Q_{min} - When burner is started or at Q_{min} a K_G utilization level of at least 1% should be reached.

$Q_{min} = 0.025 \bullet 750 \bullet 9 = 169\ m^3/h$

Selection of the control unit from the diaphragm assembly setpoint spring table (page 10)

RE320 with spring FA13 (300-600 mbar)

Selection of the closing pressure group from the closing pressure group table (page 9)

AC 5/SG 10 (for RE 320 valve Ø = 32.5)

$p_{f\,max} = p_{ds} \bullet (1 + SG/100)$

$p_{f\,max} = 500 \bullet (1 + 10 / 100) = 550$ mbar

Selection of the SSVs from the SSV control device table (page 11)
Note: Recommended upper SSV response pressure $p_{ds\,o} < 500$ mbar + p_{ds}

MDR with FD 914 (440-770 mbar) AG_o10 set to $p_{ds\,o} = 700$ mbar and FE 904 (110-150 mbar) AG_u5 set to $p_{ds\,u} = 130$ mbar

Note: When selecting springs, AG_o and AG_u must be observed. The possible minimum and maximum response pressures are calculated as follows:

$p_{dso\,min/max} = p_{ds\,o} \bullet (1 \pm AG_o / 100)$

$p_{dso\,max} = 700 \bullet (1 + 10 / 100) = 770$ mbar
$p_{dso\,min} = 700 \bullet (1 - 10 / 100) = 630$ mbar

$p_{dsu\,min/max} \bullet (1 \pm AG_u / 100)$

$p_{dsu\,max} = 130 \bullet (1 + 5 / 100) = 136.5$ mbar
$p_{dsu\,min} = 130 \bullet (1 - 5 / 100) = 123.5$ mbar

$p_{dso\,min} > p_{f\,max}$ and $p_{dsu\,max} << p_{ds} \bullet (1 - AC / 100)$

630 > 550 and 136.5 << 475

Use of a leakage gas SRV:
Selection of leakage gas SRV - Settings from table (page 8)
Note: The opening pressure (p_{do}) and closing pressure (p_{df}) to be selected for the SRV must be greater than the maximum allowable closing pressure $p_{f\,max}$ on the regulator. We recommend: $p_{do} = p_{df} > 1.1 \bullet p_{f\,max}$

FM 404 set to 60 mbar over 500 mbar ($p_{do} = p_{df} = 560$ mbar)
FM 405 set to 90 mbar over 500 mbar ($p_{do} = p_{df} = 590$ mbar)
Selected: FM 405 ($p_{do} = p_{df} = 590$ mbar)

Note: When using an SRV, $p_{dso\,min}$ must be > $p_{ds} + p_{do} + p_{do\,tolerance}$ (page 8).

630 > 500 + 90 + 15
630 > 605

Checking the gas velocities

$w = 380 \bullet Q_n / (DN^2 \bullet p_{abs})$

Inlet and outlet nominal size of the pipeline according to the selected device: 50 mm
Selected widening of outlet pipeline: 150 mm

Note: The factor 380 refers to an operating gas temperature from approx. 15°C to 20°C. For other temperatures, the velocity must be corrected as follows: $w_{corr} = w \bullet (t_{gas}+273.15)/290$

Recommended max. gas velocity at the inlet flange:
50 - 70 m/s Lower value for redirections upstream of the control valve, 20 m/s for upstream filters

$w_u = 380 \bullet 1500 / (50^2 \bullet 6) = 38$ m/s

Recommended max. gas velocity at the outlet flange:
100 - 200 m/s Lower value to reduce noise emissions

$w_d = 380 \bullet 1500 / (50^2 \bullet 1.5) = 152$ m/s

Recommended max. gas velocity on impulse tap: 15 - 25 m/s Lower value for outlet pressures below 100 mbar

$w_{Impulse} = 380 \bullet 1500 / (150^2 \bullet 1.5) = 17$ m/s

The device selected in the example of nominal size DN 50 can be operated under these conditions.

Order data

Example:

Gas pressure regulator: RS250/050/205/32,5/MD-R/HDS/links/SR/SM/RSD/BV/N/H/WAZ/So

Order selection	Designation	Order code:	RS250	050	-	205	32.5	MD-R	-	HDS	links	SR	SBV	RSD	BV	N	H	WAZ	So
Type																			
RS 250	RS250		RS 250																
RS 251	RS251																		
DN - Nominal size	Table p.18			050															
Flange model																			
PN 16	-				-														
Class 150	C																		
RE - Control unit	Table p.19					205													
D - Orifice (valve seat diameter)	Table p.19						32.5												
SSV																			
with MD control device	MD																		
with MD-R control device	MD-R							MD-R											
SSV functional class																			
A	-								-										
B	B																		
High-pressure screw spindle																			
without	-																		
with high-pressure screw spindle	HDS									HDS									
Direction of flow																			
Right (from left to right)	-																		
Left (from right to left)	links										links								
Noise reduction																			
without	-																		
with noise reduction	SR											SR							
Additional unit, control unit																			
without	-																		
Safety diaphragm	SM												SM						
Throttle valve																			
without	-																		
with throttle valve	RSD													RSD					
SSV valve accessories																			
without	-																		
Breather valve	BV														BV				
Electrical position indicator, SSV 'Closed'																			
without	-																		
with ... , via proximity switch	N															N			
with ... , via Reed contact	R																		
SSV release																			
without	-																		
with manual release	H																H		
with electromagnetic remote release, when power is supplied	SG																		
with electromagnetic remote release, in case of power failure	SA																		
Acceptance test certificate to EN 10204/3.1																			
without	-																		
with acceptance test certificate	WAZ																	WAZ	
Special model	So*																		So

DN - Nominal size

Regulator type	025	050	080	100	150	200
RS250	X	X	X	X	X	X
RS251		X	X	X		

In each selection group, only one option can be selected in each case.

*) for example coating with epoxy resin in RAL colours

RE - Control unit

Regulator type	Nominal size	Description	Recommended use of the high-pressure screw spindle in the pressure range [mbar]	Outlet pressure ranges [mbar]
RS250	DN 25	with RE 320	200 - 800	18 - 200
		with RE 205	750 - 3.000	200 - 750
	DN 50	with RE 320	200 - 800	18 - 200
		with RE 205	750 - 3.000	200 - 750
	DN 80	with RE 390	130 - 450	18 - 130
		with RE 275	400 - 1.100	130 - 400
		with RE 205	750 - 3.000	400 - 750
	DN 100	with RE 390	130 - 450	18 - 130
		with RE 275	400 - 1.100	130 - 400
		with RE 205	750 - 3.000	400 - 750
	DN 150	with RE 485	150 - 450	18 - 150
		with RE 385	350 - 850	150 - 350
		with RE 275-2	850 - 3.000	350 - 850
	DN 200	with RE 485	150 - 450	18 - 150
		with RE 385	350 - 850	150 - 350
		with RE 275-2	850 - 3.000	350 - 850
RS251	DN 50	with RE 390	130 - 450	18 - 130
		with RE 275	400 - 1.100	130 - 400
		with RE 205	750 - 3.000	400 - 750
	DN 80	with RE 385	350 - 850	18 - 350
		with RE 275-2	850 - 3.000	350 - 850
	DN 100	with RE 485	150 - 450	18 - 150
		with RE 385	350 - 850	150 - 350
		with RE 275-2	850 - 3.000	350 - 850

D - Orifice (valve seat diameter)

Regulator type	Nominal size	17.5	27.5	32.5	42.5	52.5	65	85	95	115
RS250	025	X	X							
	050	X	X	X						
	080		X	X	X					
	100		X	X	X	X				
	150				X	X	X	X	X	
	200								X	X
RS251	050		X	X	X	X				
	080				X	X	X	X		
	100				X	X	X	X	X	

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