

RS300S pilot operated gas pressure regulator

- Inlet pressure range 0.5 to 10 bar
- Outlet pressure range 0.02 to 6 bar
- Pilot feeding pressure 300 mbar above outlet pressure
- Minimum pressure difference inlet and outlet pressure 0.5 bar
- Ambient temperature -20 to + 60 °C
- Flow coefficient Cg from 400 up to 3640

Specifications

	$p_a \geq 50$ mbar	$p_a < 50$ mbar	
Accuracy class AC (DIN 3380, EN 334)	2.5	5	%
Lock-up pressure class SG (DIN 3380, EN 334)	5	10	%
Hysteresis	<0.4	<1	%
Lock-up pressure zone	<1	<1	%
Outlet pressure drift at q_{max} when varying inlet pressure from 8 to 1.5 bar	+0.5	+1	%
Starting-time:			
- DN25, DN50	<0.2	<0.2	s
- DN80, DN100	<0.4	<0.4	s
Time to open from 0-100 % valve travel:			
- DN25, DN50	<2	<2	s
- DN80, DN100	<6	<6	s
Time to close from 100-0 % valve travel:			
- DN25, DN50	<1	<1	s
- DN80, DN100	<5	<5	s
Overshoot at valve travel from 100-0 % within time to close	<10	<20	%
Undershoot at valve travel from 0-100 % in 10 s within time to open	<10	<20	%
Gas velocity at outlet flange m/s	<150	<150	
AC over-pressure slam shut device	2.5	5	%
AC under-pressure slam shut device	10	20	%

Option fast:

If demanded (for example: low overshoot at an emergency-stop) the time to close can be decreased with 100% without loss of dynamic behaviour. Please ask for option AF

Main regulator with built-in slam-shut device

Housing	ductile iron GGG 40 (DN 25 aluminium cast alloy)
Casing of actuator	aluminium cast alloy (DN80/100 Steel zinc plated)
Casing of slam shut device	aluminium cast alloy
Valve	stainless steel
Valve shaft	stainless steel
Valve shaft-bearing	POM
Surface treatment	durable protection against corrosion
Flanges	according to DIN 2633
Valve seal	NBR
Diaphragms	NBR

Capacity range

Flange diameter	Valve diameter (mm)	Cg flow coefficient for natural gas* (m ³ /h)	Face to face dimension (mm)
DN 25	22.5	400	230
DN 50	22.5	440	230
	27.5	640	
	37.5	1000	
DN 80	52.5	2270	310
DN 100	65	3640	350

* at 15 °C and 1.01325 bar

Pilot

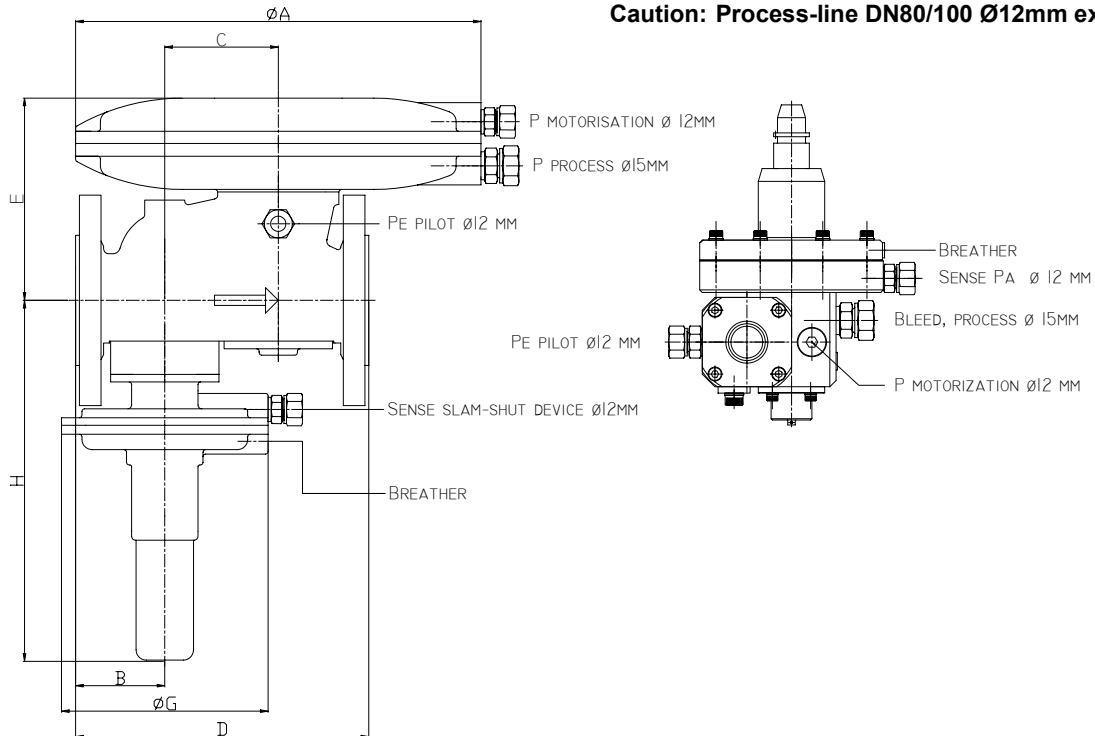
Built-in filter element	10 µm, stainless steel gauge
Pilot feeding regulator	integrated
Design	modular
Valve seats and valves	interchangeable
Valve material	NBR
Sealing/O-rings	NBR
Housing	aluminium
Surface treatment	anodised
Test points	pilot feeding pressure, motorization pressure

Pilot type

Outlet pressure Working range p _a (mbar)	Pilot type	Pilot spring part number	Set-point Range (mbar)	According to specifications AC and SG, if p _a (mbar)
0 - 50	P400	W43000	0 - 60	> 20
50 - 100		W43005	0 - 120	> 40
100 - 200		W43010	0 - 240	> 80
200 - 400		W43015	0 - 440	> 160
400 - 800	P1600	W43015	0 - 880	> 320
800 - 1,600		W43020	0 - 1,760	> 640
1,600 - 3,200	P6400	W43015	0 - 3,520	> 1,280
3,200 - 6,400		W43020	0 - 7,000	> 2,560

Dimensions RS300S

Caution: Process-line DN80/100 Ø12mm except type AF

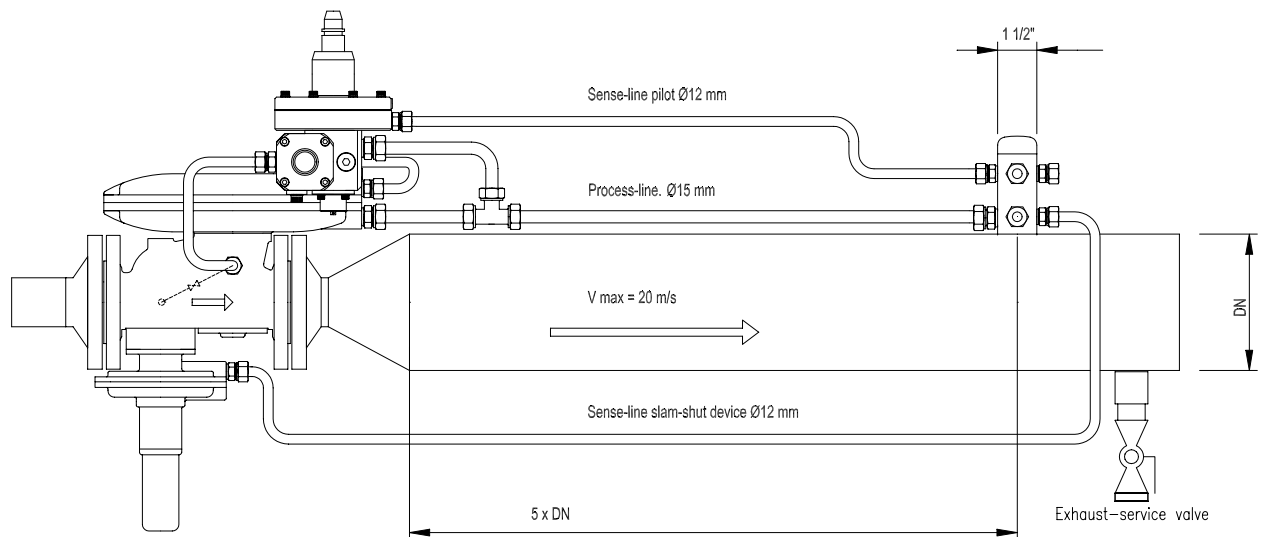


Some space (about 55 mm) underneath the safety device is needed for removal of the cap.

Housing	Outlet pressure (bar)	Pilot Type	Safety type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
DN25	0 to 0.1	P400	LD	ø320	70	90	230	158	ø144	ø222	300
	0.1 to 0.4	P400	MD	ø320	70	90	230	158	ø 144	ø162	300
	0.4 to 1.6	P1600	MD/HD	ø320	70	90	230	158	100	ø162	310
	1.6 to 6.4	P6400	HD	ø320	70	90	230	158	100	ø162	310
DN 50	0 to 0.1	P400	LD	ø320	70	90	230	181	ø144	ø222	305
	0.1 to 0.4	P400	MD	ø320	70	90	230	181	ø 144	ø162	305
	0.4 to 1.6	P1600	MD/HD	ø320	70	90	230	181	100	ø162	315
	1.6 to 6.4	P6400	HD	ø320	70	90	230	181	100	ø162	315
DN 80	0 to 0.1	P400	LD	ø375	95	120	310	265	ø144	ø222	325
	0.1 to 0.4	P400	MD	ø375	95	120	310	265	ø144	ø162	325
	0.4 to 1.6	P1600	MD/HD	ø375	95	120	310	265	100	ø162	335
	1.6 to 6.4	P6400	HD	ø375	95	120	310	265	100	ø162	335
DN 100	0 to 0.1	P400	LD	ø375	105	140	350	280	ø144	ø222	345
	0.1 to 0.4	P400	MD	ø375	105	140	350	280	ø144	ø162	345
	0.4 to 1.6	P1600	MD/HD	ø375	105	140	350	280	100	ø162	355
	1.6 to 6.4	P6400	HD	ø375	105	140	350	280	100	ø162	355

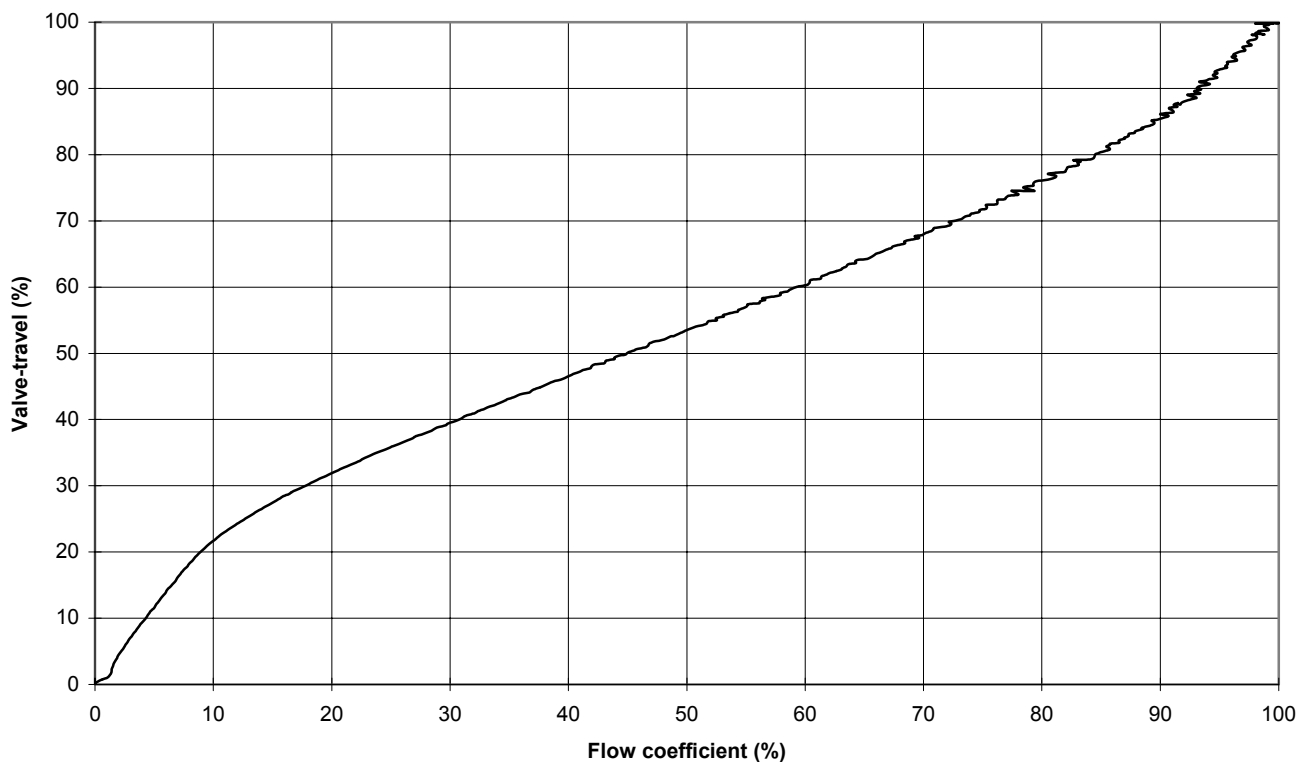
Installation

Caution: Process-line DN80/100 Ø12mm except type AF



The pilot can be mounted in all positions in the neighbourhood of the main regulator.

Flow coefficient C_g as function of valve travel



Calculation of flow and sizing

The value of the flow coefficient C_g is equal to the amount of gas passing the regulator with the valve fully opened and an absolute inlet pressure p_e of 2.013 bar and an absolute outlet pressure p_a of 1.013 bar at 15°C. The given C_g values for the RS300S series are valid for natural gas only.

	Sub-critical flow behaviour ($\frac{p_e}{p_a} \leq 2$)	Critical flow behaviour ($\frac{p_e}{p_a} > 2$)
Determination of the C_g value	$C_g = \frac{q}{\sqrt{(p_a \cdot (p_e - p_a))}}$	$C_g = \frac{2 \cdot q}{p_e}$
Determination of the flow	$q = C_g \cdot \sqrt{(p_a \cdot (p_e - p_a))}$	$q = \frac{C_g \cdot p_e}{2}$

in which:

p_e = inlet pressure (bar absolute)
 p_a = outlet pressure (bar absolute)
 q = flow (stm³/h)

We advise you to select a regulator with an approximately 10% higher C_g value than the calculated value.

Example:

$p_{e \text{ min}}$ = 1.5 bar = 2.5 bar absolute
 p_a = 100 mbar = 1.1 bar absolute
 q_{max} = 2,000 stm³/h

Solution:

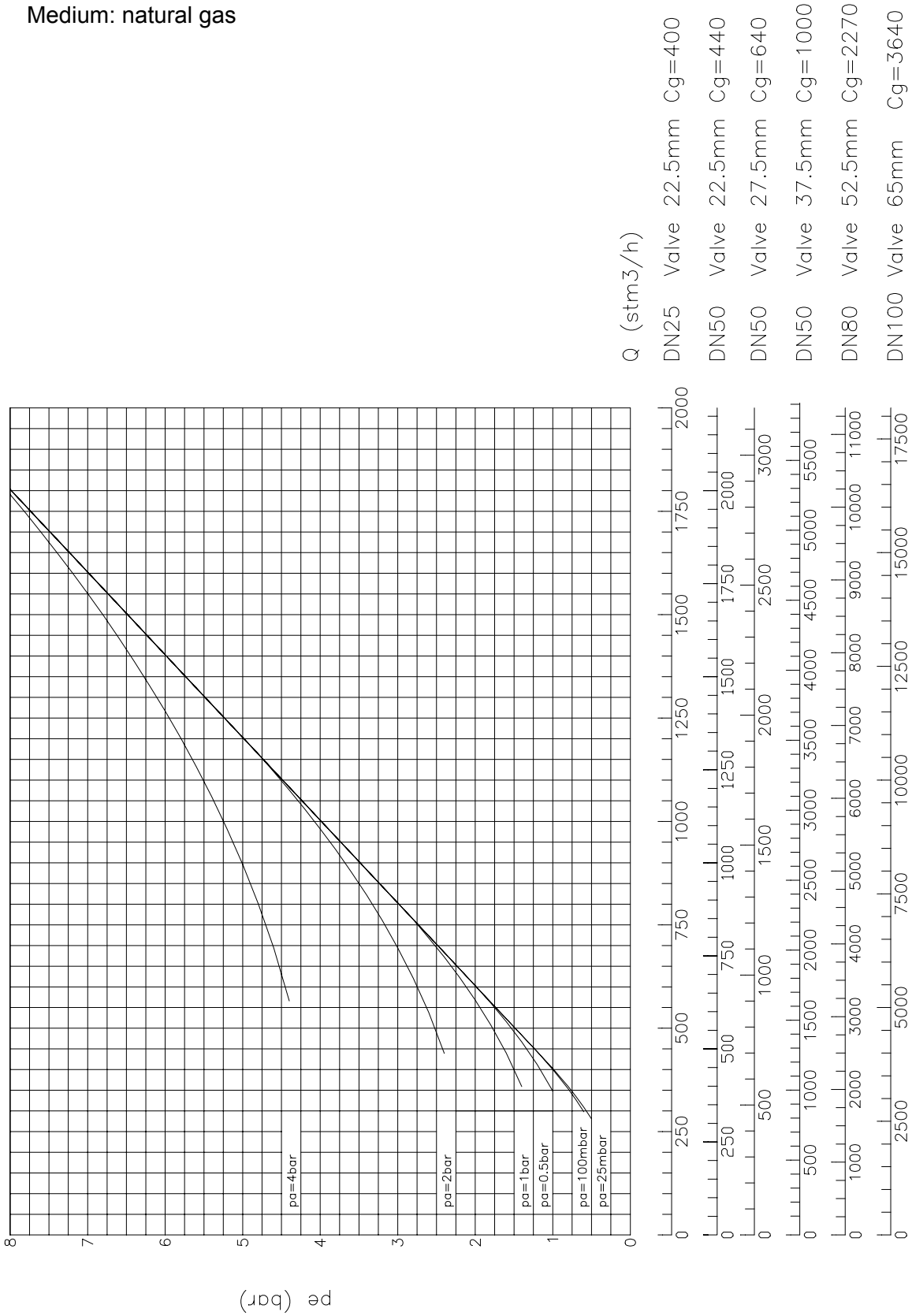
Gas flow : $\frac{p_e}{p_a} = \frac{2.5}{1.1} = 2.3 > 2 \Rightarrow$ a critical flow behaviour

C_g value : $C_g = \frac{2 \cdot q}{p_e} = \frac{2 \cdot 2,000}{2.5} = 1,600 \Rightarrow$ select size DN80 ($C_g = 2,270$)

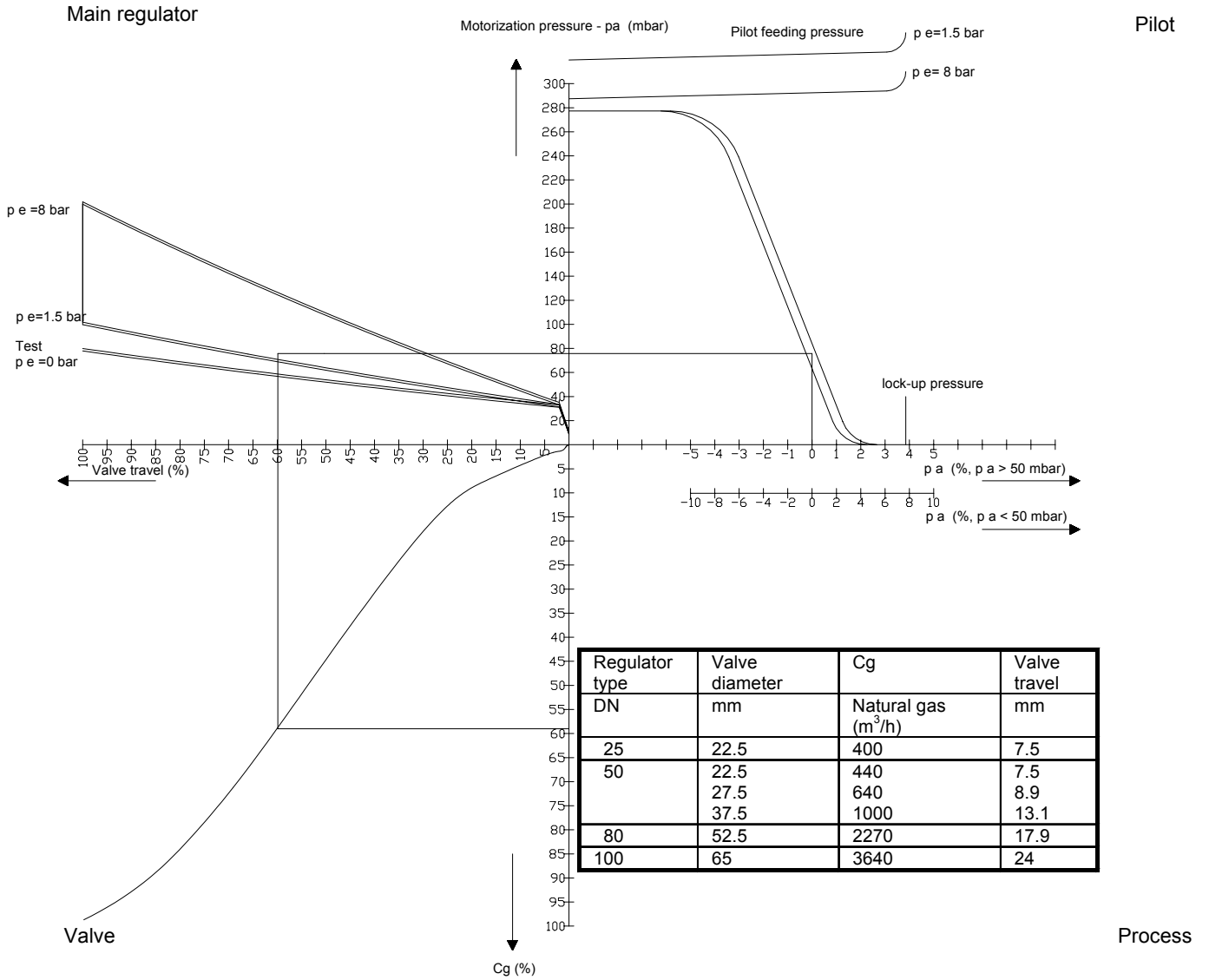
q_{max} : $q = \frac{C_g \cdot p_e}{2} = \frac{2,270 \cdot 2.5}{2} = 2,838$ stm³/h

Flow graph RS300S

Medium: natural gas



Static regulation



Dynamic regulation at $p_a=100$ mbar

