Instruction for

BOAGAZ

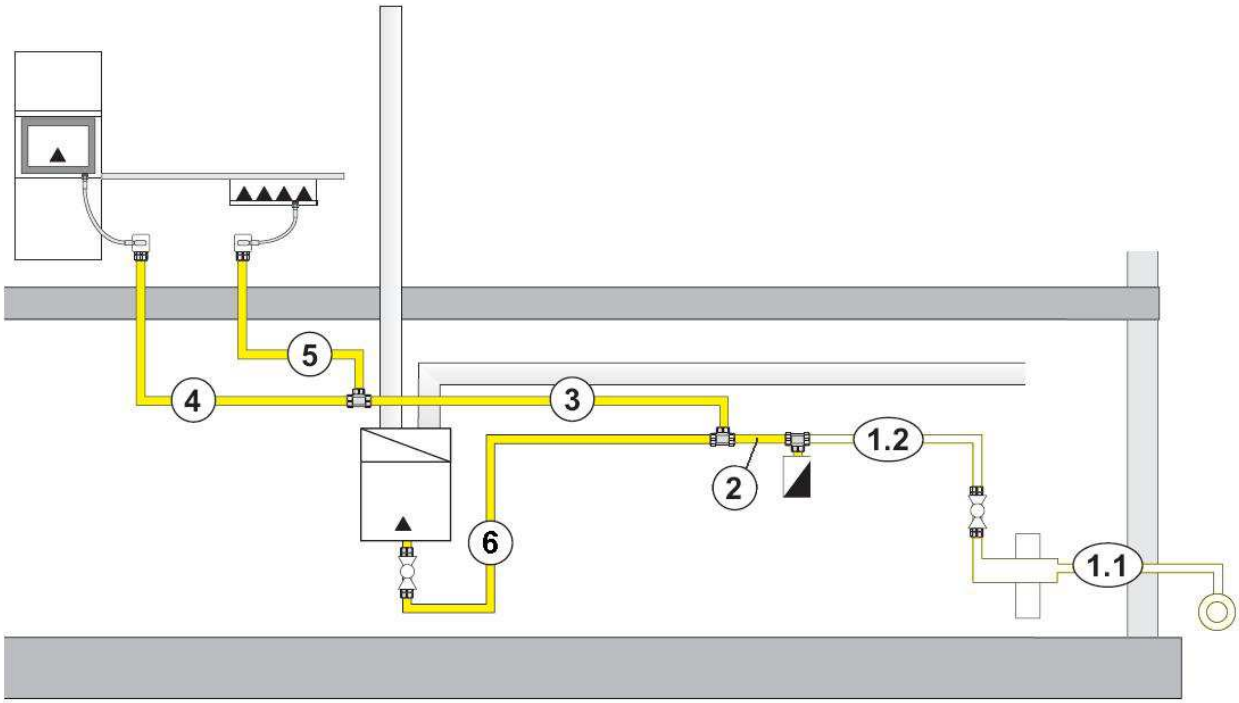
SIZING TOOL

a) Open the file

1. Open the “BOAGAZ_sizing_tool”-file with a double click on your computer. (Enable macros)
2. Select your language.
3. Choose register MEDIUM CONDITION and modify your medium data and the maximum pressure drop according to your application
4. Choose register “DIMENSIONIEREN sizing”

> Note
> There is also a register “presizing”. But the step of pre-dimensioning may also be left out. This is a big advantage by using this software. After you defined you installation, you could easy change dimensions. The program calculates automatically all pressure drops new.

b) Example for sizing



Appliances

4 Burners	= 1.0 m³/h
Oven	= 0.3 m³/h
Heater	= 16kW →1.8 m³/h

$$\dot{V}_{A,heater} = \frac{\dot{Q}_A}{H_{uB}} \frac{16}{9.04} \frac{kW \cdot m^3}{kWh} = 1.8 m^3 / h$$

Part list

The house service connection is a common PE pipe, series 5 at 20mbar.

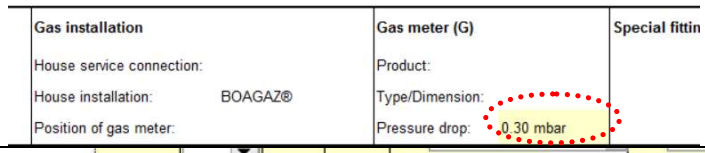
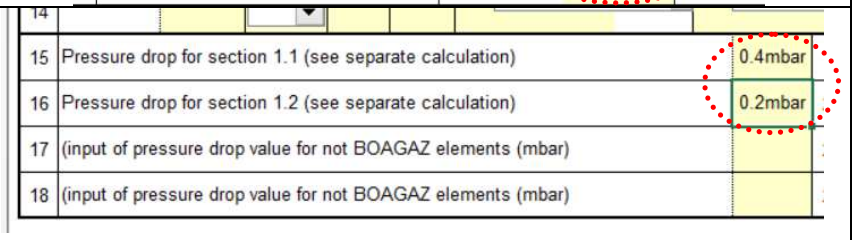
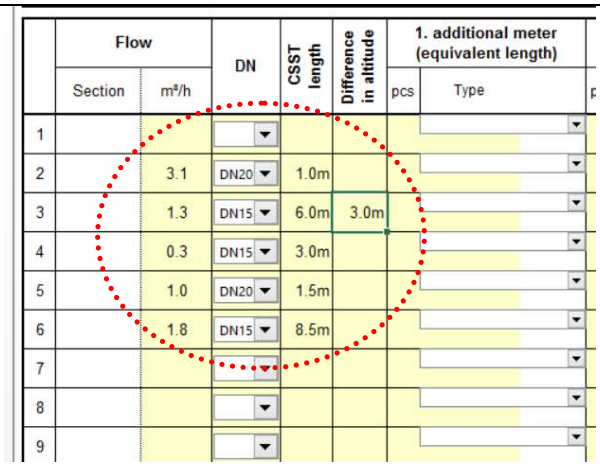
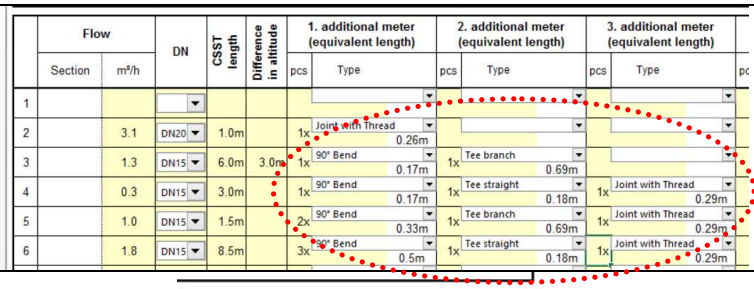
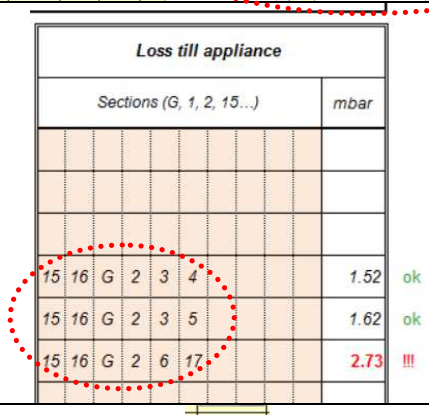
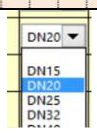
1.1 Pipe 22.5 m, 1 saddle clamp, 4 bow 45°, 1 house service connection, gas flow controller
→ 0.4 mbar pressure drop (conventional calculation, not visible in this calculation)

1.2 Pipe 6.5 m, 4 Bow 90°
→ 0.2 mbar pressure drop (conventional calculation, not visible in this calculation)

Z gas meter G2.5 (0.8 mbar)

2 BOAGAZ® Tubing 1.0 m
3 BOAGAZ® Tubing 6.0 m, 1 bow 90°, T_{branch}, 3 m difference of height (uplift)
4 BOAGAZ® Tubing 3.0 m, 1 bow 90°, $T_{straight}$, Fitting connection with thread
5 BOAGAZ® Tubing 1.5 m, 2 bow 90°, T_{branch}, Fitting connection with thread
6 BOAGAZ® Tubing 8.5 m, 3 bow 90°, $T_{straight}$, Fitting connection with thread

c) Sizing

	Step	Example	
1	Indicate the gas meter's pressure drop.	0.3 mbar (acc. to manufacturer's specification)	
2	Either the pressure drop of the house service pipe is calculated separately using the conventional method and the result is directly filled into the sheet.	1.1 = 0.44mbar 1.2 = 0.19mbar (see standard SVGW G1:2009, section 5)	
3	Put in the flow rate of each section. (Optionally may be put in the power in kW instead of flow rates. Select in this case top right "Calculation by power rating")	② = 3.1 m³/h ③ = 1.3 m³/h ④ = 0.3 m³/h ⑤ = 1.0 m³/h ⑥ = 1.8 m³/h	
4	Estimate the dimension.	② DN20 ③④⑤⑥ DN15	
5	Specify the length of each single pipe section.	② = 1.0 m ③ = 6.0 m, 3m ④ = 3.0 m ⑤ = 1.5 m ⑥ = 8.5 m	
6	Put in all separate resistances (equivalent length) for each single pipe section.	See part list e.g. 4 bows 90° Input: 4 in the first column	
7	To calculate the pressure drop for each appliance, write each section number in the gaps of the appliance's line. The order of entry does not matter	Oven ④: Z,①,②,③,④,13 Burner ⑤: Z,①,②,③,⑤,13 Heater ⑥: Z,①,②,⑥,13	
8	Choose the proper dimension. If the dimension fits, no !!! should be visible anymore.		

BOAGAZ Sizing for a BOAGAZ-Installation with: Natural Gas G20 (EN 437)

Definitions		Pressure specifications (20 - 500 mbar)		Gas installation		Gas meter (G)		Special fitting
$H_{i,B}$	9.64 kWh/m³	System pressure	20 mbar	House service connection:		Product:		
T	15 °C			House installation:	BOAGAZ®	Type/Dimension:		
p_b	1013 mbar	Max. allowed pressure drop	2.6 mbar	Position of gas meter:		Pressure drop:	0.30 mbar	

	Flow		DN	CSST length	Difference in altitude	1. additional meter (equivalent length)		2. additional meter (equivalent length)		3. additional meter (equivalent length)		4. additional meter (equivalent length)		Σ	R in	R*(l+Σl)	Loss till appliance	
	Section	m³/h				pcs	Type	pcs	Type	pcs	Type	pcs	Type	m	mbar/m	mbar	Sections (G, 1, 2, 15…)	mbar
1																		
2		3.1	DN20	1.0m		1x	Joint with Thread 0.26m							1.26	0.119	0.15		
3		1.3	DN15	6.0m	3.0m	1x	90° Bend 0.17m	1x	Tee branch 0.69m					6.85	0.093	0.51		
4		0.3	DN15	3.0m		1x	90° Bend 0.17m	1x	Tee straight 0.18m	1x	Joint with Thread 0.29m			3.63	0.016	0.06	15 16 G 2 3 4	1.62
5		1.0	DN15	1.5m		2x	90° Bend 0.33m	1x	Tee branch 0.69m	1x	Joint with Thread 0.29m			2.81	0.055	0.15	15 16 G 2 3 5	1.72
6		1.8	DN20	8.5m		3x	90° Bend 0.72m	1x	Tee straight 0.15m	1x	Joint with Thread 0.26m			9.64	0.038	0.36	15 16 G 2 6 17	1.51
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		

15	Pressure drop for section 1.1 (see separate calculation)	0.4mbar	19	(input of pressure drop value for not BOAGAZ elements (mbar)	
16	Pressure drop for section 1.2 (see separate calculation)	0.2mbar	20	(input of pressure drop value for not BOAGAZ elements (mbar)	
17	Gas Tap	0.1mbar	21	(input of pressure drop value for not BOAGAZ elements (mbar)	
18	(input of pressure drop value for not BOAGAZ elements (mbar)		22	(input of pressure drop value for not BOAGAZ elements (mbar)	

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