



DRUKVERLIESTABELLEN

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2 Pressure loss in Geberit PushFit, potable water

2.1 Potable water 10 °C

Medium: Water
 Temperature: 10 °C
 Density: 999.7 kg/m³

Viscosity: 0.001306 Pa·s
 Surface roughness: 0.007 mm

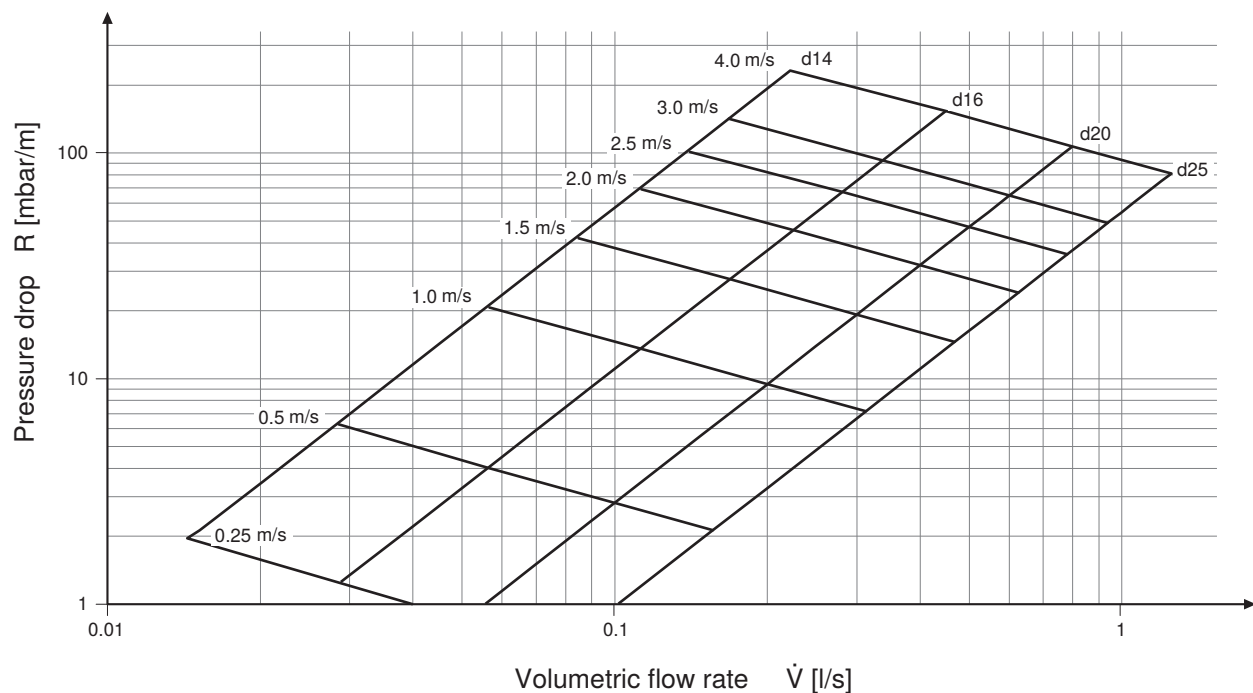


Table 1: Pressure loss in Geberit system pipes, potable water 10 °C

d [mm]	14		16		20		25	
$\dot{V}$ [l/s]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
0.01	0.18	1.02	0.09	0.26				
0.02	0.35	2.04	0.18	0.51	0.10	0.16		
0.03	0.53	7.00	0.27	1.38	0.15	0.24	0.10	0.10
0.04	0.70	11.47	0.35	2.24	0.20	0.58	0.13	0.13
0.05	0.88	16.88	0.44	3.29	0.25	0.85	0.16	0.30
0.06	1.06	23.18	0.53	4.50	0.30	1.15	0.19	0.40
0.07	1.23	30.36	0.62	5.87	0.35	1.50	0.22	0.52
0.08	1.41	38.37	0.71	7.40	0.40	1.89	0.25	0.66
0.09	1.59	47.22	0.80	9.08	0.45	2.31	0.29	0.81
0.10	1.76	56.88	0.88	10.91	0.50	2.78	0.32	0.97
0.15	2.64	117.08	1.33	22.23	0.75	5.62	0.48	1.94
0.20	3.52	196.43	1.77	36.99	0.99	9.30	0.64	3.21
0.25	4.41	294.38	2.21	55.07	1.24	13.79	0.80	4.74
0.30	5.29	410.58	2.65	76.36	1.49	19.05	0.95	6.53

d [mm]	14		16		20		25	
$\dot{V}$ [l/s]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
0.35	6.17	544.78	3.09	100.81	1.74	25.06	1.11	8.58
0.40			3.54	128.35	1.99	31.81	1.27	10.87
0.45			3.98	158.96	2.24	39.29	1.43	13.40
0.50			4.42	192.59	2.49	47.48	1.59	16.16
0.55			4.86	229.23	2.74	56.37	1.75	19.16
0.60			5.31	268.85	2.98	65.97	1.91	22.39
0.65			5.75	311.44	3.23	76.26	2.07	25.85
0.70			6.19	356.98	3.48	87.23	2.23	29.53
0.75			6.63	405.45	3.73	98.89	2.39	33.43
0.80					3.98	111.22	2.55	37.56
0.85					4.23	124.23	2.71	41.90
0.90					4.48	137.91	2.86	46.47
0.95					4.72	152.26	3.02	51.25
1.00					4.97	167.27	3.18	56.25
1.05					5.22	182.95	3.34	61.46
1.10					5.47	199.29	3.50	66.89
1.15					5.72	216.29	3.66	72.53
1.20					5.97	233.94	3.82	78.38
1.25					6.22	252.25	3.98	84.44
1.30					6.47	271.21	4.14	90.71
1.40					6.96	311.09	4.46	103.89
1.50							4.77	117.90
1.60							5.09	132.74
1.70							5.41	148.41
1.80							5.73	164.90
1.90							6.05	182.21
2.00							6.37	200.34
2.10							6.68	219.29

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2.2 Potable water 60 °C

Medium: Water
Temperature: 60 °C
Density: 983.2 kg/m³

Viscosity: 0.000467 Pa·s
Surface roughness: 0.007 mm

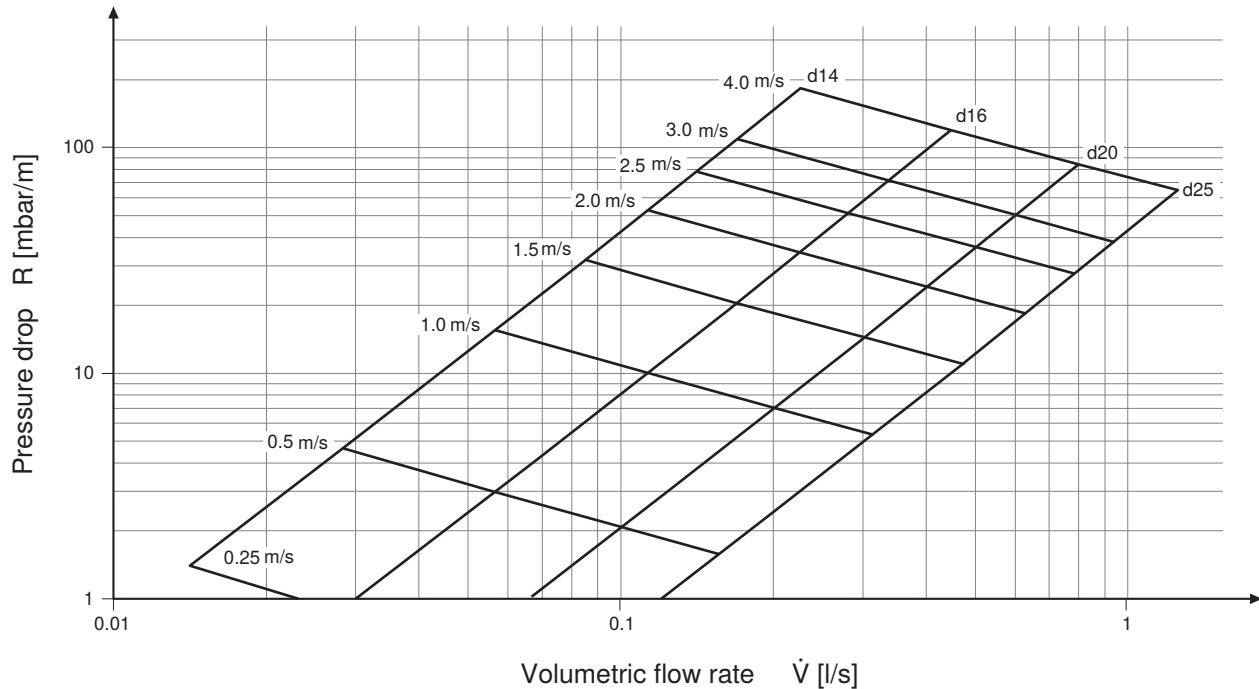


Table 2: Pressure loss in Geberit system pipes, potable water 60 °C

d [mm]	14		16		20		25	
$\dot{V}$ [l/s]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
0.01	0.18	0.78	0.09	0.09				
0.02	0.35	2.59	0.18	0.50	0.10	0.13		
0.03	0.53	5.27	0.27	1.01	0.15	0.26	0.10	0.09
0.04	0.70	8.76	0.35	1.68	0.20	0.43	0.13	0.15
0.05	0.88	13.03	0.44	2.48	0.25	0.63	0.16	0.22
0.06	1.06	18.06	0.53	3.42	0.30	0.86	0.19	0.30
0.07	1.23	23.84	0.62	4.49	0.35	1.13	0.22	0.39
0.08	1.41	30.35	0.71	5.70	0.40	1.43	0.25	0.49
0.09	1.59	37.58	0.80	7.03	0.45	1.76	0.29	0.61
0.10	1.76	45.54	0.88	8.49	0.50	2.12	0.32	0.73
0.15	2.64	95.91	1.33	17.65	0.75	4.37	0.48	1.49
0.20	3.52	163.69	1.77	29.81	0.99	7.33	0.64	2.49
0.25	4.41	248.65	2.21	44.90	1.24	10.98	0.80	3.72
0.30	5.29	350.69	2.65	62.89	1.49	15.30	0.95	5.16
0.35	6.17	469.74	3.09	83.74	1.74	20.28	1.11	6.82
0.40			3.54	107.43	1.99	25.91	1.27	8.70
0.45			3.98	133.95	2.24	32.20	1.43	10.78

d [mm]	14		16		20		25	
$\dot{V}$ [l/s]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
0.50			4.42	163.30	2.49	39.12	1.59	13.07
0.55			4.86	195.45	2.74	46.69	1.75	15.57
0.60			5.31	230.41	2.98	54.89	1.91	18.27
0.65			5.75	268.16	3.23	63.73	2.07	21.17
0.70			6.19	308.71	3.48	73.19	2.23	24.27
0.75			6.63	352.05	3.73	83.29	2.39	27.58
0.80					3.98	94.02	2.55	31.08
0.85					4.23	105.37	2.71	34.79
0.90					4.48	117.35	2.86	38.69
0.95					4.72	129.96	3.02	42.79
1.00					4.97	143.19	3.18	47.09
1.05					5.22	157.04	3.34	51.59
1.10					5.47	171.52	3.50	56.28
1.15					5.72	186.62	3.66	61.18
1.20					5.97	202.34	3.82	66.26
1.25					6.22	218.68	3.98	71.55
1.30					6.47	235.64	4.14	77.03
1.40					6.96	271.43	4.46	88.57
1.50							4.77	100.90
1.60							5.09	114.00
1.70							5.41	127.88
1.80							5.73	142.54
1.90							6.05	157.98
2.00							6.37	174.19
2.10							6.68	191.18

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3 Pressure loss in Geberit PushFit, heating

3.1 Recommended flow velocities

The following recommendations apply for the heating pressure loss tables:

- Radiator connection pipes: flow velocity ≤ 0.3 m/s
- Distribution pipes: flow velocity ≤ 0.5 m/s
- Riser pipes and cellar pipes: flow velocity ≤ 0.8 m/s

3.2 Heating, inlet flow 45 °C / return flow 35 °C

Medium:	Water	Density:	992.2 kg/m ³
Inlet flow temperature:	45 °C	Viscosity:	0.0006533 Pa•s
Return temperature:	35 °C	Specific thermal capacity:	4182 J/(kg•K)
Range:	10 K	Surface roughness:	0.007 mm
Average temperature:	40 °C		

Table 3: Pressure loss in Geberit system pipes, heating, inlet flow 45 °C / return flow 35 °C

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
200	17.2	0.08	0.246	0.04	0.062	0.02	0.020		
300	25.8	0.13	0.369	0.06	0.093	0.04	0.029	0.02	0.012
400	34.4	0.17	0.492	0.09	0.124	0.05	0.039	0.03	0.016
500	43.0	0.21	1.198	0.11	0.155	0.06	0.049	0.04	0.020
600	51.6	0.25	1.635	0.13	0.322	0.07	0.059	0.05	0.024
700	60.3	0.30	2.129	0.15	0.418	0.08	0.069	0.05	0.028
800	68.9	0.34	2.678	0.17	0.524	0.10	0.135	0.06	0.032
900	77.5	0.38	3.282	0.19	0.641	0.11	0.165	0.07	0.036
1000	86.1	0.42	3.939	0.21	0.768	0.12	0.198	0.08	0.069
1100	94.7	0.47	4.648	0.23	0.904	0.13	0.232	0.08	0.081
1200	103.3	0.51	5.407	0.26	1.050	0.14	0.270	0.09	0.094
1300	111.9	0.55	6.218	0.28	1.205	0.16	0.309	0.10	0.108
1400	120.5	0.59	7.078	0.30	1.370	0.17	0.351	0.11	0.122
1500	129.1	0.64	7.987	0.32	1.543	0.18	0.395	0.12	0.138
1600	137.7	0.68	8.944	0.34	1.726	0.19	0.441	0.12	0.154
1700	146.3	0.72	9.950	0.36	1.917	0.20	0.490	0.13	0.171
1800	154.9	0.76	11.004	0.38	2.118	0.22	0.540	0.14	0.188
1900	163.6	0.81	12.105	0.40	2.327	0.23	0.593	0.15	0.206
2000	172.2	0.85	13.253	0.43	2.544	0.24	0.648	0.15	0.225
2500	215.2	1.06	19.685	0.53	3.759	0.30	0.954	0.19	0.331
3000	258.2	1.27	27.250	0.64	5.179	0.36	1.310	0.23	0.454
3500	301.3	1.49	35.924	0.75	6.799	0.42	1.716	0.27	0.593
4000	344.3	1.70	45.687	0.85	8.615	0.48	2.168	0.31	0.748
4500	387.4	1.91	56.527	0.96	10.623	0.54	2.668	0.35	0.919

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
5000	430.4	2.12	68.431	1.07	12.819	0.60	3.213	0.38	1.105
5500	473.5	2.34	81.391	1.17	15.202	0.66	3.802	0.42	1.306
6000	516.5	2.55	95.396	1.28	17.769	0.72	4.436	0.46	1.522
6500	559.5	2.76	110.443	1.39	20.518	0.78	5.114	0.50	1.753
7000	602.6	2.97	126.526	1.49	23.448	0.84	5.835	0.54	1.998
7500	645.6			1.60	26.558	0.90	6.599	0.58	2.257
8000	688.7			1.70	29.846	0.96	7.405	0.61	2.531
8500	731.7			1.81	33.311	1.02	8.253	0.65	2.818
9000	774.7			1.92	36.952	1.08	9.143	0.69	3.119
9500	817.8			2.02	40.769	1.14	10.074	0.73	3.434
10000	860.8			2.13	44.760	1.20	11.046	0.77	3.763
10500	903.9			2.24	48.924	1.26	12.059	0.81	4.105
11000	946.9			2.34	53.262	1.32	13.113	0.84	4.460
11500	990.0			2.45	57.772	1.38	14.208	0.88	4.829
12000	1033.0			2.56	62.454	1.44	15.342	0.92	5.211
12500	1076.0			2.66	67.308	1.50	16.517	0.96	5.606
13000	1119.1			2.77	72.333	1.56	17.732	1.00	6.014
13500	1162.1			2.88	77.527	1.62	18.986	1.04	6.436
14000	1205.2			2.98	82.892	1.68	20.280	1.07	6.870
14500	1248.2					1.74	21.614	1.11	7.317
15000	1291.2					1.80	22.987	1.15	7.778
15500	1334.3					1.86	24.399	1.19	8.251
16000	1377.3					1.92	25.850	1.23	8.736
16500	1420.4					1.98	27.341	1.27	9.235
17000	1463.4					2.04	28.870	1.30	9.746
17500	1506.5					2.10	30.438	1.34	10.270
18000	1549.5					2.16	32.045	1.38	10.806
18500	1592.5					2.22	33.690	1.42	11.355
19000	1635.6					2.28	35.374	1.46	11.917
19500	1678.6					2.34	37.097	1.50	12.491
20000	1721.7					2.40	38.858	1.53	13.078
20500	1764.7					2.46	40.657	1.57	13.677
21000	1807.7					2.52	42.494	1.61	14.288
21500	1850.8					2.58	44.370	1.65	14.912
22000	1893.8					2.64	46.284	1.69	15.548
22500	1936.9					2.70	48.236	1.73	16.197
23000	1979.9					2.76	50.226	1.76	16.857
23500	2023.0					2.82	52.254	1.80	17.530
24000	2066.0					2.88	54.320	1.84	18.216

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
24500	2109.0					2.94	56.424	1.88	18.913
25000	2152.1					3.00	58.565	1.92	19.623
25500	2195.1							1.96	20.345
26000	2238.2							1.99	21.079
26500	2281.2							2.03	21.825
27000	2324.2							2.07	22.583
27500	2367.3							2.11	23.354
28000	2410.3							2.15	24.136
28500	2453.4							2.19	24.931
29000	2496.4							2.22	25.738
29500	2539.5							2.26	26.556
30000	2582.5							2.30	27.387
32500	2797.7							2.49	31.721
35000	3012.9							2.68	36.353
37500	3228.1							2.88	41.282

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3.3 Heating, inlet flow 55 °C / return flow 45 °C

Medium:	Water	Density:	988.0 kg/m ³
Inlet flow temperature:	55 °C	Viscosity:	0.0005477 Pa·s
Return temperature:	45 °C	Specific thermal capacity:	4181 J/(kg·K)
Range:	10 K	Surface roughness:	0.007 mm
Average temperature:	50 °C		

Table 4: Pressure loss in Geberit system pipes, heating, inlet flow 55 °C / return flow 45 °C

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
200	17.2	0.09	0.207	0.04	0.052	0.02	0.016		
300	25.8	0.13	0.310	0.06	0.078	0.04	0.025	0.02	0.010
400	34.4	0.17	0.781	0.09	0.104	0.05	0.033	0.03	0.014
500	43.1	0.21	1.143	0.11	0.225	0.06	0.041	0.04	0.017
600	51.7	0.26	1.562	0.13	0.306	0.07	0.049	0.05	0.020
700	60.3	0.30	2.036	0.15	0.398	0.08	0.103	0.05	0.024
800	68.9	0.34	2.565	0.17	0.500	0.10	0.129	0.06	0.027
900	77.5	0.38	3.146	0.19	0.612	0.11	0.157	0.07	0.055
1000	86.1	0.43	3.778	0.21	0.734	0.12	0.188	0.08	0.066
1100	94.7	0.47	4.462	0.24	0.865	0.13	0.222	0.08	0.077
1200	103.3	0.51	5.195	0.26	1.005	0.14	0.257	0.09	0.090
1300	111.9	0.55	5.978	0.28	1.154	0.16	0.295	0.10	0.103
1400	120.5	0.60	6.809	0.30	1.313	0.17	0.335	0.11	0.117
1500	129.2	0.64	7.688	0.32	1.480	0.18	0.378	0.12	0.131
1600	137.8	0.68	8.615	0.34	1.656	0.19	0.422	0.12	0.147
1700	146.4	0.73	9.589	0.36	1.840	0.20	0.469	0.13	0.163
1800	155.0	0.77	10.609	0.39	2.033	0.22	0.517	0.14	0.180
1900	163.6	0.81	11.677	0.41	2.235	0.23	0.568	0.15	0.197
2000	172.2	0.85	12.790	0.43	2.445	0.24	0.621	0.15	0.215
2500	215.3	1.07	19.036	0.54	3.619	0.30	0.916	0.19	0.317
3000	258.3	1.28	26.398	0.64	4.993	0.36	1.259	0.23	0.435
3500	301.4	1.49	34.851	0.75	6.564	0.42	1.651	0.27	0.569
4000	344.4	1.71	44.382	0.86	8.326	0.48	2.088	0.31	0.719
4500	387.5	1.92	54.977	0.96	10.276	0.54	2.572	0.35	0.884
5000	430.5	2.13	66.626	1.07	12.412	0.60	3.099	0.39	1.064
5500	473.6	2.35	79.321	1.18	14.731	0.66	3.671	0.42	1.258
6000	516.6	2.56	93.057	1.28	17.233	0.72	4.286	0.46	1.467
6500	559.7	2.77	107.825	1.39	19.913	0.78	4.944	0.50	1.691
7000	602.7	2.99	123.626	1.50	22.773	0.84	5.644	0.54	1.928
7500	645.8			1.61	25.809	0.90	6.387	0.58	2.179
8000	688.8			1.71	29.022	0.96	7.171	0.62	2.444
8500	731.9			1.82	32.410	1.02	7.996	0.65	2.723
9000	774.9			1.93	35.973	1.08	8.862	0.69	3.015

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
9500	818.0			2.03	39.709	1.14	9.769	0.73	3.321
10000	861.0			2.14	43.618	1.20	10.717	0.77	3.640
10500	904.1			2.25	47.699	1.26	11.704	0.81	3.973
11000	947.1			2.35	51.952	1.32	12.732	0.85	4.318
11500	990.2			2.46	56.376	1.38	13.800	0.89	4.677
12000	1033.2			2.57	60.971	1.44	14.908	0.92	5.048
12500	1076.3			2.68	65.736	1.50	16.055	0.96	5.433
13000	1119.3			2.78	70.671	1.57	17.242	1.00	5.830
13500	1162.4			2.89	75.776	1.63	18.468	1.04	6.241
14000	1205.5			3.00	81.050	1.69	19.733	1.08	6.664
14500	1248.5					1.75	21.037	1.12	7.100
15000	1291.6					1.81	22.381	1.16	7.548
15500	1334.6					1.87	23.763	1.19	8.009
16000	1377.7					1.93	25.184	1.23	8.483
16500	1420.7					1.99	26.643	1.27	8.969
17000	1463.8					2.05	28.141	1.31	9.468
17500	1506.8					2.11	29.677	1.35	9.980
18000	1549.9					2.17	31.252	1.39	10.503
18500	1592.9					2.23	32.865	1.43	11.040
19000	1636.0					2.29	34.517	1.46	11.588
19500	1679.0					2.35	36.207	1.50	12.149
20000	1722.1					2.41	37.934	1.54	12.722
20500	1765.1					2.47	39.700	1.58	13.308
21000	1808.2					2.53	41.504	1.62	13.906
21500	1851.2					2.59	43.346	1.66	14.516
22000	1894.3					2.65	45.225	1.70	15.138
22500	1937.3					2.71	47.143	1.73	15.772
23000	1980.4					2.77	49.098	1.77	16.419
23500	2023.4					2.83	51.091	1.81	17.078
24000	2066.5					2.89	53.122	1.85	17.749
24500	2109.5					2.95	55.191	1.89	18.432
25000	2152.6							1.93	19.127
25500	2195.6							1.96	19.834
26000	2238.7							2.00	20.553
26500	2281.8							2.04	21.284
27000	2324.8							2.08	22.028
27500	2367.9							2.12	22.783
28000	2410.9							2.16	23.550
28500	2454.0							2.20	24.330

d [mm]		14		16		20		25	
$\dot{Q}$ [W]	$\dot{m}$ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
29000	2497.0							2.23	25.121
29500	2540.1							2.27	25.924
30000	2583.1							2.31	26.739
32500	2798.4							2.50	30.993
35000	3013.6							2.70	35.543
37500	3228.9							2.89	40.389

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3.4 Heating, inlet flow 70 °C / return flow 50 °C

Medium:	Water	Density:	983.2 kg/m ³
Inlet flow temperature:	70 °C	Viscosity:	0.0004666 Pa•s
Return temperature:	50 °C	Specific thermal capacity:	4183 J/(kg•K)
Range:	20 K	Surface roughness:	0.007 mm
Average temperature:	60 °C		

Table 5: Pressure loss in Geberit system pipes, heating, inlet flow 70 °C / return flow 50 °C

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
200	8.6	0.04	0.089	0.02	0.022				
300	12.9	0.06	0.133	0.03	0.033				
400	17.2	0.09	0.177	0.04	0.045	0.02	0.014		
500	21.5	0.11	0.221	0.05	0.056	0.03	0.018		
600	25.8	0.13	0.459	0.06	0.067	0.04	0.021	0.02	0.009
700	30.1	0.15	0.596	0.08	0.078	0.04	0.025	0.03	0.010
800	34.4	0.17	0.748	0.09	0.089	0.05	0.028	0.03	0.012
900	38.7	0.19	0.915	0.10	0.180	0.05	0.032	0.03	0.013
1000	43.0	0.21	1.096	0.11	0.215	0.06	0.035	0.04	0.014
1100	47.3	0.24	1.291	0.12	0.253	0.07	0.039	0.04	0.016
1200	51.6	0.26	1.499	0.13	0.293	0.07	0.076	0.05	0.017
1300	55.9	0.28	1.722	0.14	0.336	0.08	0.087	0.05	0.019
1400	60.2	0.30	1.957	0.15	0.382	0.08	0.098	0.05	0.020
1500	64.5	0.32	2.206	0.16	0.430	0.09	0.111	0.06	0.039
1600	68.9	0.34	2.468	0.17	0.480	0.10	0.123	0.06	0.043
1700	73.2	0.36	2.743	0.18	0.533	0.10	0.137	0.07	0.048
1800	77.5	0.39	3.030	0.19	0.588	0.11	0.151	0.07	0.053
1900	81.8	0.41	3.330	0.20	0.645	0.11	0.165	0.07	0.058
2000	86.1	0.43	3.643	0.21	0.705	0.12	0.181	0.08	0.063
2500	107.6	0.54	5.389	0.27	1.038	0.15	0.265	0.10	0.092
3000	129.1	0.64	7.435	0.32	1.426	0.18	0.363	0.12	0.126
3500	150.6	0.75	9.774	0.38	1.867	0.21	0.474	0.14	0.164
4000	172.1	0.86	12.398	0.43	2.361	0.24	0.598	0.15	0.207
4500	193.6	0.96	15.304	0.48	2.905	0.27	0.734	0.17	0.254
5000	215.2	1.07	18.488	0.54	3.499	0.30	0.883	0.19	0.305
5500	236.7	1.18	21.947	0.59	4.143	0.33	1.044	0.21	0.360
6000	258.2	1.29	25.679	0.64	4.835	0.36	1.216	0.23	0.419
6500	279.7	1.39	29.680	0.70	5.576	0.39	1.400	0.25	0.482
7000	301.2	1.50	33.949	0.75	6.364	0.42	1.595	0.27	0.549
7500	322.7	1.61	38.485	0.81	7.199	0.45	1.802	0.29	0.620
8000	344.3	1.71	43.286	0.86	8.080	0.48	2.020	0.31	0.694
8500	365.8	1.82	48.351	0.91	9.008	0.51	2.250	0.33	0.772
9000	387.3	1.93	53.679	0.97	9.983	0.54	2.490	0.35	0.854

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
9500	408.8	2.04	59.267	1.02	11.002	0.57	2.741	0.37	0.939
10000	430.3	2.14	65.117	1.07	12.068	0.60	3.003	0.39	1.028
10500	451.8	2.25	71.226	1.13	13.178	0.63	3.276	0.41	1.121
11000	473.3	2.36	77.595	1.18	14.334	0.67	3.559	0.43	1.217
11500	494.9	2.46	84.223	1.24	15.534	0.70	3.854	0.45	1.317
12000	516.4	2.57	91.108	1.29	16.780	0.73	4.158	0.46	1.420
12500	537.9	2.68	98.250	1.34	18.069	0.76	4.474	0.48	1.527
13000	559.4	2.79	105.649	1.40	19.403	0.79	4.799	0.50	1.637
13500	580.9	2.89	113.305	1.45	20.781	0.82	5.136	0.52	1.751
14000	602.4	3.00	121.217	1.50	22.203	0.85	5.482	0.54	1.868
14500	624.0			1.56	23.669	0.88	5.839	0.56	1.989
15000	645.5			1.61	25.179	0.91	6.206	0.58	2.113
15500	667.0			1.67	26.732	0.94	6.584	0.60	2.240
16000	688.5			1.72	28.329	0.97	6.972	0.62	2.371
16500	710.0			1.77	29.970	1.00	7.369	0.64	2.505
17000	731.5			1.83	31.653	1.03	7.778	0.66	2.642
17500	753.0			1.88	33.380	1.06	8.196	0.68	2.783
18000	774.6			1.93	35.150	1.09	8.624	0.70	2.927
18500	796.1			1.99	36.963	1.12	9.062	0.72	3.074
19000	817.6			2.04	38.820	1.15	9.511	0.74	3.225
19500	839.1			2.10	40.719	1.18	9.969	0.75	3.379
20000	860.6			2.15	42.661	1.21	10.437	0.77	3.536
20500	882.1			2.20	44.646	1.24	10.916	0.79	3.696
21000	903.7			2.26	46.673	1.27	11.404	0.81	3.860
21500	925.2			2.31	48.743	1.30	11.902	0.83	4.027
22000	946.7			2.36	50.856	1.33	12.410	0.85	4.197
22500	968.2			2.42	53.012	1.36	12.928	0.87	4.370
23000	989.7			2.47	55.209	1.39	13.456	0.89	4.547
23500	1011.2			2.53	57.450	1.42	13.993	0.91	4.727
24000	1032.8			2.58	59.732	1.45	14.541	0.93	4.910
24500	1054.3			2.63	62.058	1.48	15.098	0.95	5.096
25000	1075.8			2.69	64.425	1.51	15.665	0.97	5.285
25500	1097.3			2.74	66.835	1.54	16.242	0.99	5.478
26000	1118.8			2.79	69.287	1.57	16.828	1.01	5.674
26500	1140.3			2.85	71.782	1.60	17.425	1.03	5.873
27000	1161.8			2.90	74.318	1.63	18.031	1.04	6.075
27500	1183.4			2.96	76.897	1.66	18.646	1.06	6.280
28000	1204.9					1.69	19.272	1.08	6.488
28500	1226.4					1.72	19.907	1.10	6.700

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
29000	1247.9					1.75	20.551	1.12	6.915
29500	1269.4					1.78	21.206	1.14	7.133
30000	1290.9					1.81	21.870	1.16	7.353
32500	1398.5					1.97	25.334	1.26	8.505
35000	1506.1					2.12	29.038	1.35	9.734
37500	1613.7					2.27	32.981	1.45	11.040
40000	1721.3					2.42	37.161	1.55	12.422
42500	1828.8					2.57	41.577	1.64	13.880
45000	1936.4					2.72	46.230	1.74	15.414
47500	2044.0					2.87	51.118	1.84	17.024
50000	2151.6							1.93	18.709
52500	2259.1							2.03	20.469
55000	2366.7							2.13	22.303
57500	2474.3							2.23	24.212
60000	2581.9							2.32	26.195
62500	2689.5							2.42	28.252
65000	2797.0							2.52	30.383
67500	2904.6							2.61	32.587
70000	3012.2							2.71	34.866
72500	3119.8							2.81	37.217
75000	3227.3							2.90	39.643
77500	3334.9							3.00	42.141

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3.5 Heating, inlet flow 70 °C / return flow 55 °C

Medium:	Water	Density:	981.9 kg/m ³
Inlet flow temperature:	70 °C	Viscosity:	0.00045098 Pa·s
Return temperature:	55 °C	Specific thermal capacity:	4184 J/(kg·K)
Range:	15 K	Surface roughness:	0.007 mm
Average temperature:	62.5 °C		

Table 6: Pressure loss in Geberit system pipes, heating, inlet flow 70 °C / return flow 55 °C

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
200	11.5	0.06	0.114	0.03	0.029				
300	17.2	0.09	0.171	0.04	0.043	0.02	0.014		
400	22.9	0.11	0.228	0.06	0.058	0.03	0.018	0.02	0.007
500	28.7	0.14	0.543	0.07	0.072	0.04	0.023	0.03	0.009
600	34.4	0.17	0.741	0.09	0.086	0.05	0.027	0.03	0.011
700	40.2	0.20	0.965	0.10	0.190	0.06	0.032	0.04	0.013
800	45.9	0.23	1.214	0.11	0.238	0.06	0.036	0.04	0.015
900	51.6	0.26	1.487	0.13	0.291	0.07	0.075	0.05	0.017
1000	57.4	0.29	1.784	0.14	0.348	0.08	0.090	0.05	0.019
1100	63.1	0.31	2.105	0.16	0.410	0.09	0.105	0.06	0.037
1200	68.8	0.34	2.448	0.17	0.476	0.10	0.122	0.06	0.043
1300	74.6	0.37	2.815	0.19	0.546	0.10	0.140	0.07	0.049
1400	80.3	0.40	3.204	0.20	0.621	0.11	0.159	0.07	0.056
1500	86.0	0.43	3.615	0.22	0.699	0.12	0.179	0.08	0.062
1600	91.8	0.46	4.048	0.23	0.782	0.13	0.200	0.08	0.070
1700	97.5	0.49	4.503	0.24	0.868	0.14	0.222	0.09	0.077
1800	103.3	0.51	4.979	0.26	0.959	0.15	0.245	0.09	0.085
1900	109.0	0.54	5.477	0.27	1.054	0.15	0.269	0.10	0.094
2000	114.7	0.57	5.995	0.29	1.152	0.16	0.294	0.10	0.102
2500	143.4	0.71	8.902	0.36	1.701	0.20	0.432	0.13	0.150
3000	172.1	0.86	12.319	0.43	2.343	0.24	0.593	0.15	0.205
3500	200.8	1.00	16.235	0.50	3.076	0.28	0.777	0.18	0.268
4000	229.4	1.14	20.642	0.57	3.896	0.32	0.981	0.21	0.339
4500	258.1	1.29	25.534	0.65	4.803	0.36	1.207	0.23	0.416
5000	286.8	1.43	30.905	0.72	5.796	0.40	1.453	0.26	0.500
5500	315.5	1.57	36.750	0.79	6.872	0.44	1.720	0.28	0.591
6000	344.2	1.72	43.067	0.86	8.031	0.48	2.007	0.31	0.689
6500	372.8	1.86	49.852	0.93	9.272	0.52	2.313	0.34	0.793
7000	401.5	2.00	57.102	1.00	10.595	0.56	2.639	0.36	0.904
7500	430.2	2.14	64.816	1.08	11.998	0.61	2.984	0.39	1.021
8000	458.9	2.29	72.991	1.15	13.482	0.65	3.348	0.41	1.145
8500	487.6	2.43	81.627	1.22	15.045	0.69	3.731	0.44	1.275
9000	516.3	2.57	90.720	1.29	16.688	0.73	4.133	0.46	1.411

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
9500	544.9	2.72	100.270	1.36	18.410	0.77	4.553	0.49	1.553
10000	573.6	2.86	110.277	1.43	20.210	0.81	4.992	0.52	1.701
10500	602.3			1.51	22.089	0.85	5.449	0.54	1.856
11000	631.0			1.58	24.045	0.89	5.925	0.57	2.016
11500	659.7			1.65	26.079	0.93	6.419	0.59	2.183
12000	688.3			1.72	28.190	0.97	6.931	0.62	2.356
12500	717.0			1.79	30.378	1.01	7.462	0.65	2.534
13000	745.7			1.87	32.644	1.05	8.010	0.67	2.718
13500	774.4			1.94	34.985	1.09	8.576	0.70	2.909
14000	803.1			2.01	37.404	1.13	9.160	0.72	3.105
14500	831.7			2.08	39.899	1.17	9.762	0.75	3.307
15000	860.4			2.15	42.469	1.21	10.381	0.77	3.515
15500	889.1			2.22	45.116	1.25	11.018	0.80	3.728
16000	917.8			2.30	47.839	1.29	11.673	0.83	3.947
16500	946.5			2.37	50.637	1.33	12.345	0.85	4.172
17000	975.1			2.44	53.511	1.37	13.035	0.88	4.403
17500	1003.8			2.51	56.461	1.41	13.742	0.90	4.640
18000	1032.5			2.58	59.486	1.45	14.467	0.93	4.882
18500	1061.2			2.65	62.586	1.49	15.209	0.96	5.130
19000	1089.9			2.73	65.761	1.53	15.968	0.98	5.383
19500	1118.5			2.80	69.012	1.57	16.745	1.01	5.642
20000	1147.2			2.87	72.337	1.61	17.539	1.03	5.907
20500	1175.9			2.94	75.738	1.65	18.350	1.06	6.177
21000	1204.6					1.69	19.179	1.08	6.453
21500	1233.3					1.74	20.024	1.11	6.734
22000	1262.0					1.78	20.887	1.14	7.022
22500	1290.6					1.82	21.767	1.16	7.314
23000	1319.3					1.86	22.664	1.19	7.612
23500	1348.0					1.90	23.578	1.21	7.916
24000	1376.7					1.94	24.510	1.24	8.225
24500	1405.4					1.98	25.458	1.27	8.540
25000	1434.0					2.02	26.423	1.29	8.860
25500	1462.7					2.06	27.405	1.32	9.185
26000	1491.4					2.10	28.405	1.34	9.517
26500	1520.1					2.14	29.421	1.37	9.853
27000	1548.8					2.18	30.454	1.39	10.195
27500	1577.4					2.22	31.504	1.42	10.543
28000	1606.1					2.26	32.570	1.45	10.895
28500	1634.8					2.30	33.654	1.47	11.254

d [mm]		14		16		20		25	
Q̇ [W]	ṁ [kg/h]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]	v [m/s]	R [mbar/m]
29000	1663.5					2.34	34.755	1.50	11.618
29500	1692.2					2.38	35.872	1.52	11.987
30000	1720.8					2.42	37.007	1.55	12.361
32500	1864.2					2.62	42.929	1.68	14.315
35000	2007.6					2.82	49.271	1.81	16.403
37500	2151.1							1.94	18.625
40000	2294.5							2.07	20.980
42500	2437.9							2.20	23.467
45000	2581.3							2.32	26.086
47500	2724.7							2.45	28.836
50000	2868.1							2.58	31.718
52500	3011.5							2.71	34.730
55000	3154.9							2.84	37.874
57500	3298.3							2.97	41.147

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