

Figure 1 Example project: Elevation of 6 floor building

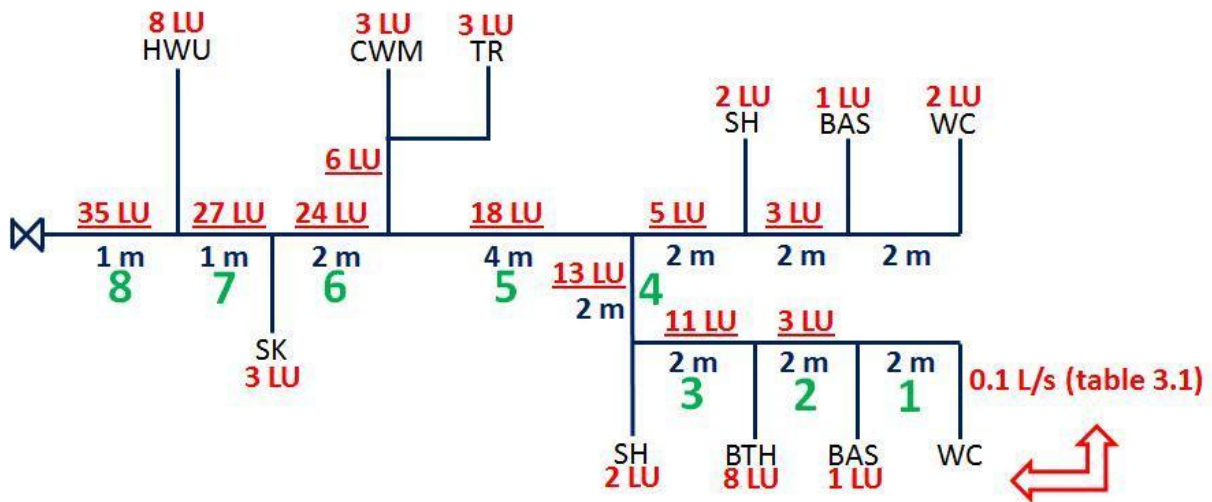


Figure 2 Example project: Schematic arrangement of piping within Apartment 10

PIPE SIZING TABULATION SHEET												
FITTINGS AND VALVES VELOCITY PRESSURE LOSS METHOD												
PIPE SECTION	LOADING UNITS	FLOW RATE	TUBE SIZE	VELOCITY	FITTINGS & VALVES				PIPE SECTION LENGTH	PRESSURE LOSS PER 100 m TUBE	FITTINGS & VALVES PRESSURE LOSS	PIPE SECTION PRESSURE LOSS
					No	Type	Head loss factor	Pressure loss each $m=K*(v^2/2g)$				
Labelled	No	L/s	DN	m/s	No	Type	K	m. head	m	m. head	m. head	m. head
1	*	0.1	15									
1	*	0.1	15									
1	*	0.1	15									
2	3	0.14	20									
2	3	0.14	20									
3	11	0.28	20									
3	11	0.28	20									

Figure 3 Example project: Loading units, flow rates and tube sizes entered for Apartment 10.

PIPE SIZING TABULATION SHEET												
FITTINGS AND VALVES VELOCITY PRESSURE LOSS METHOD												
PIPE SECTION	LOADING UNITS	FLOW RATE	TUBE SIZE	VELOCITY	FITTINGS & VALVES				PIPE SECTION LENGTH	PRESSURE LOSS PER 100 m TUBE	FITTINGS & VALVES PRESSURE LOSS	PIPE SECTION PRESSURE LOSS
					No	Type	Head loss factor	Pressure loss each $m=K*(v^2/2g)$				
Labelled	No	L/s	DN	m/s	No	Type	K	m. head	m	m. head	m. head	m. head
1	*	0.1	15	1.076				0.000	2		0.000	0.000
1	*	0.1	15	1.076	1	elbow		0.000			0.000	0.000
1	*	0.1	15	1.076	1	reducer		0.000			0.000	0.000
2	3	0.14	20	0.616				0.000	2		0.000	0.000
2	3	0.14	20	0.616	1	flow tee		0.000			0.000	0.000
3	11	0.28	20	1.232				0.000	2		0.000	0.000
3	11	0.28	20	1.232	1	flow tee		0.000			0.000	0.000

Figure 4 Example project: Pipe lengths, fittings and valves entered for the main run (water main to furthest fixture)

**TABLE 2**

CHAPTER 3		PRESSURE REQUIREMENTS AND LOSSES									
Topic No. 3.4		Description PIPE SIZING DATA WATER AT 15 °C, THROUGH A.S. 1432 COPPER TUBES, TYPE B.									
FLOW Q <sub>l</sub> 0.01 to 0.50 LITRES PER SEC.	NOMINAL 10 mm		NOMINAL 15 mm		NOMINAL 18 mm		NOMINAL 20 mm		NOMINAL 25 mm		
	ACTUAL O.D. 9.52 mm		ACTUAL O.D. 12.70 mm		ACTUAL O.D. 15.88 mm		ACTUAL O.D. 19.05 mm		ACTUAL O.D. 25.40 mm		
	Velocity m/s	Head Loss m/100m	Velocity m/s	Head Loss m/100m	Velocity m/s	Head Loss m/100m	Velocity m/s	Head Loss m/100m	Velocity m/s	Head Loss m/100m	
0.01	0.215	1.347	0.108	0.338	0.066	0.129	0.044	0.057	0.024	0.017	
0.02	0.429	4.923	0.215	0.872	0.133	0.258	0.088	0.113	0.048	0.034	
0.03	0.644	10.808	0.323	1.961	0.199	0.588	0.132	0.170	0.072	0.051	
0.04	0.859	17.733	0.430	3.460	0.266	1.045	0.176	0.372	0.097	0.068	
0.05	1.074	26.098	0.538	5.071	0.332	1.629	0.220	0.582	0.121	0.130	
0.06	1.288	35.841	0.645	6.943	0.399	2.225	0.264	0.838	0.145	0.187	
0.07	1.503	46.916	0.753	9.065	0.465	2.900	0.308	1.095	0.169	0.254	
0.08	1.718	59.287	0.860	11.428	0.532	3.651	0.352	1.377	0.193	0.332	
0.09	1.933	72.924	0.968	14.028	0.598	4.476	0.396	1.686	0.217	0.409	
0.10	2.147	87.804	1.076	16.858	0.665	5.373	0.440	2.022	0.242	0.490	
0.11	2.362	103.905	1.183	19.914	0.731	6.340	0.484	2.384	0.266	0.577	
0.12	2.577	121.209	1.291	23.193	0.798	7.377	0.528	2.772	0.290	0.670	
0.13	2.792	139.701	1.398	26.690	0.864	8.481	0.572	3.184	0.314	0.769	
0.14	3.006	159.366	1.506	30.404	0.931	9.653	0.616	3.622	0.338	0.874	
0.15	3.221	180.193	1.613	34.330	0.997	10.891	0.660	4.084	0.362	0.985	

Figure 5 Example project: Reading the velocity for a given flow and pipe size from the Barrie Smith book.

**PIPE SIZING TABULATION SHEET**

**FITTINGS AND VALVES VELOCITY PRESSURE LOSS METHOD**

PIPE SECTION	LOADING UNITS	FLOW RATE	TUBE SIZE	VELOCITY	FITTINGS & VALVES				PIPE SECTION LENGTH	PRESSURE LOSS PER 100 m TUBE	FITTINGS & VALVES PRESSURE LOSS	PIPE SECTION PRESSURE LOSS
					No	Type	Head loss factor	Pressure loss each $m=K*(v^2/2g)$				
Labelled	No	L/s	DN	m/s	No	Type	K	m. head	m	m. head	m. head	m. head
1	*	0.1	15	1.076				0.000	2	16.858	0.000	0.337
1	*	0.1	15	1.076	1	elbow		0.000			0.000	0.000
1	*	0.1	15	1.076	1	reducer		0.000			0.000	0.000
2	3	0.14	20	0.616				0.000	2	3.622	0.000	0.072
2	3	0.14	20	0.616	1	flow tee		0.000			0.000	0.000
3	11	0.28	20	1.232				0.000	2	12.191	0.000	0.244
3	11	0.28	20	1.232	1	flow tee		0.000			0.000	0.000

Figure 6 Example project: Calculated pressure losses for each pipe section (right hand column)

TABLE 32

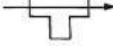
CHAPTER 3		PRESSURE REQUIREMENTS AND LOSSES								TEES	
Topic No. 3.5.2		Description PRESSURE LOSS DATA Velocity determined from flow through A.S.1432 Type B. Copper tube Pressure losses in metres head for: TEES - LINE FLOW.									
FLOW Qℓ	15 mm	20 mm	25 mm	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm		
Litres per Sec.	K = 0.9	K = 0.9	K = 0.9	K = 0.9	K = 0.9	K = 0.9	K = 0.9	K = 0.9	K = 0.9		
0.10	0.053										
0.20	0.212	0.036									
0.30	0.478	0.080	0.024								

Figure 7 Example project: Identifying the 'K' factor for a given size and type of fitting (From Barrie Smith book)

PIPE SIZING TABULATION SHEET												
FITTINGS AND VALVES VELOCITY PRESSURE LOSS METHOD												
PIPE SECTION	LOADING UNITS	FLOW RATE	TUBE SIZE	VELOCITY	FITTINGS & VALVES				PIPE SECTION LENGTH	PRESSURE LOSS PER 100 m TUBE	FITTINGS & VALVES PRESSURE LOSS	PIPE SECTION PRESSURE LOSS
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1	*	0.1	15	1.076	1	elbow	2.2	0.130			0.130	0.000
1	*	0.1	15	1.076	1	reducer	1	0.059			0.059	0.000
2	3	0.14	20	0.616				0.000	2	3.622	0.000	0.072
2	3	0.14	20	0.616	1	flow tee	0.9	0.017			0.017	0.000
3	11	0.28	20	1.232				0.000	2	12.191	0.000	0.244
3	11	0.28	20	1.232	1	flow tee	0.9	0.070			0.070	0.000

Figure 8 Example project: Entering the fitting and valve 'K' factors to calculate the fitting and valve pressure loss

