

## PIPE SIZING

When designing an installation the sizes of all installation piping shall be determined from the maximum gas rate of the appliances to be connected.

Allowance should also be made for the possibility of future extensions, especially if the piping is to be buried.

For natural gas at 21 mbar the pressure drop between the outlet of the meter and the points to be connected shall not exceed 1 mbar at maximum flow conditions. Low pressure 3<sup>rd</sup> family gas supplies should be regulated at 28 mbar (Butane) or 37 mbar (Propane), with a pressure drop not exceeding 2.5 mbar.

Discharge in a straight corrugated stainless steel tube with 1.0 mbar differential pressure between the ends, for gas of relative density 0.6 (i.e. natural gas), (when air =1), and with 2.5 mbar differential for gas of relative density 1.5 (i.e. propane)

*TracPipe corrugated stainless steel tube to BS 7838*

TracPipe size	Length of pipe metres									
	3	6	9	12	15	20	25	30	40	50
mm	Discharge – cubic metres per hour									
12	1.5	1.0	0.85	0.82	0.69	0.52	0.41	0.34		
15	2.9	1.9	1.5	1.3	1.1	0.95	0.92	0.88	0.66	0.52
22	8.7	5.8	4.6	3.9	3.4	2.9	2.5	2.3	2.0	1.78
28	18	12	9.4	8.0	7.0	5.9	5.2	4.7	4.0	3.6
32	28.8	19.8	15.3	13.5	11.7	9.9	8.5	7.6	6.5	5.7
40	48.6	33.3	26.1	22.5	19.8	17.1	15.3	13.5	11.7	10.8
50	110	75	60	50	42	35	32	28	25	22

Note : When using this table to estimate gas flow in TracPipe of a known length, this length should be increased by the values given in the table following for every bend and tee.

Equivalent pipe lengths for 90 degree bends and tees – length of pipe to be added to length of pipe run for each bend and / or tee.

TracPipe size DN	90 degree bend metres	Tee metres
12	0.3	0.5
15	0.3	0.5
22	0.3	0.5
28	0.3	0.5
32	0.45	1.0
40	0.45	1.0
50	0.65	1.5

## PRESSURE DROP for *TracPipe*

Where the pressure drop permitted differs from 1 mbar (for natural gas), or 2.5 mbar (for propane or butane), calculation from first principles may be carried out using the following values :

- 12 mm TracPipe – as 12 mm copper, in accordance with BS EN 1057
- 15 mm TracPipe – as 15 mm copper, in accordance with BS EN 1057
- 22 mm TracPipe – as 22 mm copper, in accordance with BS EN 1057
- 28 mm TracPipe – as 28 mm copper, in accordance with BS EN 1057
- 32 mm TracPipe – capacity at 90 % of 35 mm copper, in accordance with BS EN 1057
- 40 mm TracPipe – capacity at 90 % of 42 mm copper, in accordance with BS EN 1057
- 50 mm TracPipe – as 50 mm steel, in accordance with BS 1387 or BS 3601.

## NOTES ON BUTANE

- For a given rate of flow in a given pipe, the pressure drop for Propane at 37 mbar equals approximately 0.75 of the pressure drop for Butane at 28 mbar.
- A given pipe with Butane at 28 mbar will carry approximately the same volume equivalent as it would with Propane at 37 mbar.

## ALTITUDE EFFECT ON PRESSURE

Compensation for the effects of altitude should be made for pipes in high-rise buildings. Lighter than air gases will show an increase in pressure due to altitude, whereas for heavier than air gases the reverse is true. The following formula may be used :

$$h = K \times (1-G) \times H$$

where,

K = 0.123 (dimensionless)

h = pressure change due to altitude (mbar)

H = altitude change (metres)

G = density of the gas relative to air (dimensionless)