COMPRESSED AIR FLOW CHART

FOR USE WITH LARGE INSTALLATIONS OR LONG DISTANCES OF PIPE.
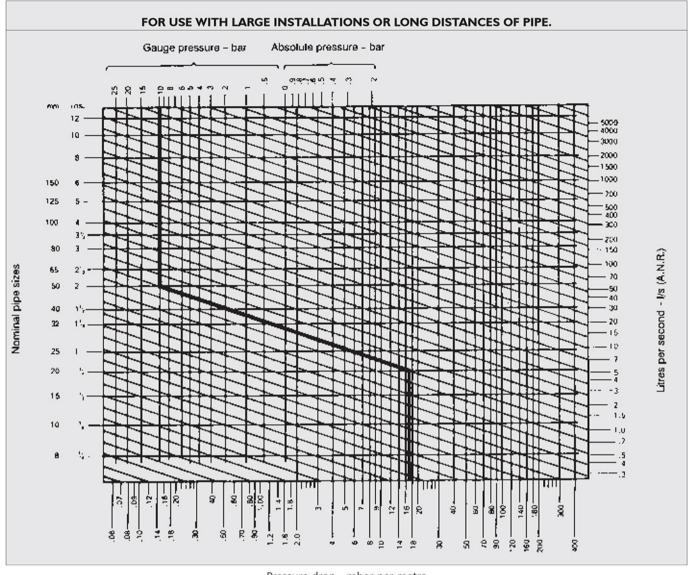
Pressure drop - mbar per metre

Note: A.N.R. (Atmosphere Normale de Reference) Standard Reference Atmosphere ISO R554 - 20degC 65% Relative Humidity 1013 mbar

Conversion: 1mbar=0.1 kpa
1l/s=2.1191cfm

How to use the compressed air flow chart.

Four quantities are involved in the use of this chart, these being air pressure, rate of flow, pipe size and pressure drop. Any one of these can be determined providing the remaining three are known.

PROBLEM 1:
Air initially at 10 bar is being transmitted at a rate of 60 l/s free air through 20mm pipe. What will be the pressure drop due to friction through 30 metres of pipe?

SOLUTION:
(This example is plotted on the chart) From the point representing 10 bar at the top of the chart proceed down vertically to intersect with the horizontal line representing 60 l/s on the right hand scale. Proceed diagonally downwards, parallel to the guide lines to intersect the horizontal line representing 20mm on the left hand side scale. From this point proceed vertically to the pressure drop scale on the bottom of the chart and take the reading. The pressure drop is found to be approximately 17 mbar per metre of pipe or 510 mbar (0.5 bar) per 30 metres of pipe.

PROBLEM 2:
10 l/s of free air is required at a pressure of 4 bar with a maximum allowable pressure drop of 140 mbar per 30 metres of pipe. What would be the recommended pipe size for this application?

SOLUTION:
From the point representing 4 bar on the top axis of the chart proceed down vertically to intersect the horizontal line representing 10 l/s on the right hand scale. Proceed diagonally, parallel to the guide lines to intersect the vertical line from the bottom scale representing the allowable pressure drop of 140 mbar per 30 metres of pipe (Read 140/30 = 4.5). From this intersection point proceed horizontally to the left hand side of the chart. The point falls between 10mm and 15mm pipe sizes. The correct selection therefore, is 15mm pipe.

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