PRESSURE DROP IN HOSES

The following tables of pressure drops and flow rates are based on experimental data and may be considered typical of most hoses. The data is based upon hoses laid out in a straight line and thus it must not be considered as an exact result that may be obtained at a given pressure. Variables such as hose fittings and bends increase the frictional losses and an estimate of their effect may be determined by adding an "equivalent length" to the hose length. Values of the equivalent length (Le) may be determined using the inside diameter (D) of the hose in the following relationships:

90° swept elbow – Le = 20D
90° square elbow – Le = 50D
45° square elbow – Le = 16D
Hose coupling – Le = 5D

Pressure Drop (kPa/100m) Water at 20°C Through Hose

Flowrate l/m	Hose Internal Diameter												
	12.5	16	19	25	32	38	40	50	64	75	80	100	125
25	1100	470	210	50									
50		2440	770	200	90	30							
100			2660	730	300	100	55	30					
200					1030	405	285	95	25				
300						900	650	210	65	20			
400							1200	370	110	40			
500								580	155	70	50		
1000									575	230	180	55	
2000										920	600	220	45
3000										2125	1400	490	100
4000												805	190
5000												1390	315

NOTE: (1) Pressure drop is directly proportioned to the length of hose.
(2) Friction is independent of pressure and proportional to velocity.

Pressure Drop of Air Through Rubber Hose

Size (mm)	Cu./m of Free Air							
	0.5	1.0	1.25	1.5	2.0	2.75	3.5	4.25
12.5	249	855	1325	-	-	-	-	-
19	-	215	350	505	895	1725	2745	-
25	-	-	-	-	250	465	755	1100
32	-	-	-	-	80	100	175	285
38	-	-	-	-	-	45	75	135

Size (mm)	Cu./m of Free Air											
	15	20	30	40	50	60	70	80	90	100	125	150
50	385	680	1530	2690	4230	-	-	-	-	-	-	-
64	160	270	565	1020	1630	2350	3170	4185	5270	-	-	-
76	-	-	215	330	520	745	1020	1335	1675	2035	3190	4590

To obtain frictional pressure loss in kPa/100m divide above values by the ratio of compression listed here:

kPa W.P.	Ratio of Compression
400	3.9
500	4.9
600	5.9
700	6.9
800	7.85
900	8.85
1000	9.85

PRESSURE LOSS - LAYFLAT HOSE