https://www.tlv.com/global/NL/calculator/water-pressure-loss-through-piping.html?advanced=on

Vergelijking(en)

$$\Delta p = \frac{\mu \cdot l \cdot v^2 \cdot \rho \cdot SG}{2d}$$

ρ: density of water (1000 kg/m³)

d : Binnendiameter leiding (m)
l : Leidinglengte (m)
v : Watersnelheid (m/s)
Δp: Drukverlies (Pa)
μ : Wrijvingscoëfficiënt
SG: Watergravitatie

$$\text{deltap} = \frac{\mu \cdot l \cdot v^2 \cdot SG}{2d} \qquad \text{flow} = v \cdot A$$

A = oppervlak slang binnenkant m2
flow= m2/s

$$v = \frac{\text{flow}}{A} \qquad v = \frac{\text{flow}}{0.25 \cdot \pi \cdot d^2}$$

$$\text{deltap} = \frac{\mu \cdot l \cdot \left(\frac{\text{flow}}{0.25 \cdot \pi \cdot d^2}\right)^2 \cdot SG}{2d}$$

$$\text{deltap} = \frac{0.81056946913870217155 \cdot SG \cdot \mu \cdot \text{flow}^2 \cdot l}{d^5}$$

$\mu := 0.05$ $SG := 1000$ $\text{flow} := 2000$ l/uur $k1 := 3.7 \cdot 10^{-4}$

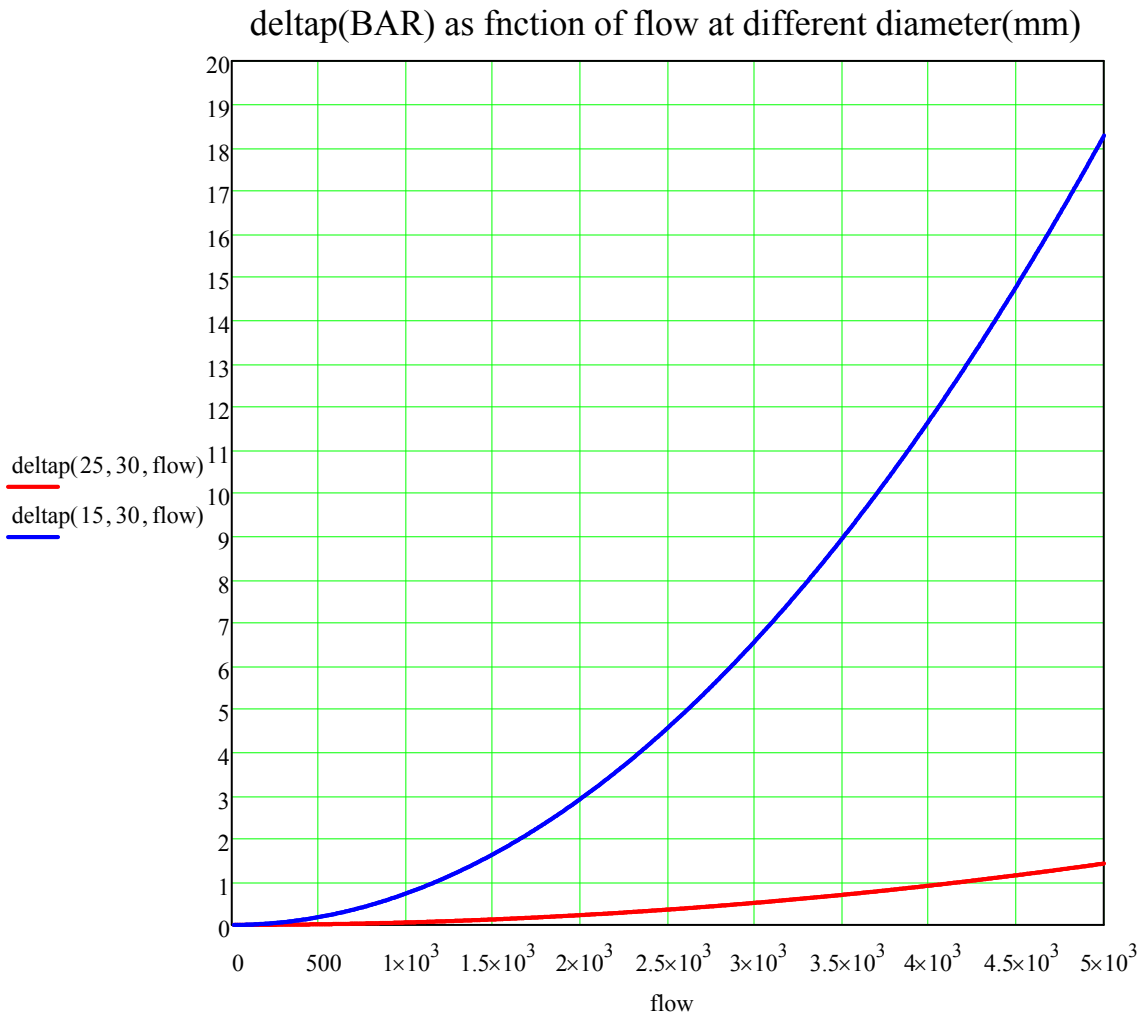
k1 tuned with calculator tool

$\text{flow\_l\_p\_s} := \text{flow}$ $d := 25$ $l := 30$

$$\text{deltap}(d, l, \text{flow}) := \frac{\text{flow}^2 \cdot \mu \cdot l \cdot SG \cdot k1}{d^5}$$

$\text{deltap}(25, 30, \text{flow}) = 0.227$

$\text{flow} := 10, 20 .. 5000$


deltap(BAR) as fnction of flow at different diameter(mm)
deltap(25, 30, flow)
deltap(15, 30, flow)
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
500
1×10^3
1.5×10^3
2×10^3
2.5×10^3
3×10^3
3.5×10^3
4×10^3
4.5×10^3
5×10^3
flow