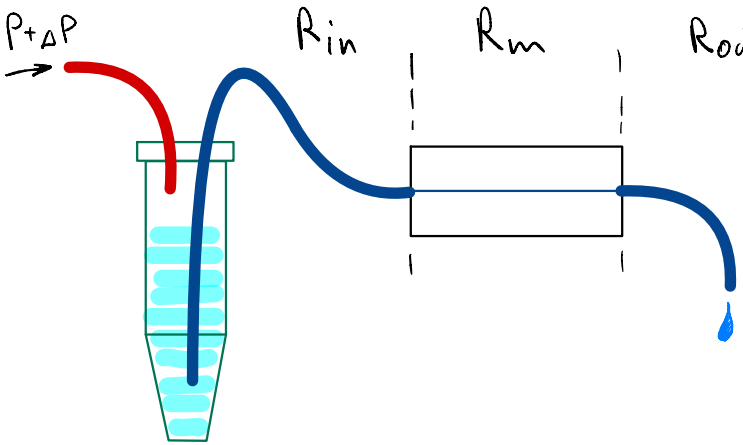
Hydraulischen System aufbau



$R_m \gg R_{in}, R_{out}$

$\Delta p = R_{hyd} \cdot Q$ $\quad [Q] = \frac{m^3}{s}$ $\quad [\Delta p] = Pa = \frac{N}{m^2}$ $\quad 1\,Bar = 10^5\,Pa$

$Q_{min} = 0{,}1\,\mu l/min \hat{=} 1{,}67 \cdot 10^{-12}\,\frac{m^3}{s}$

$Q_{max} = 1\,ml/min \hat{=} 1{,}64 \cdot 10^{-8}\,\frac{m^3}{s}$ $\quad \| \quad Q_{reg} < 0{,}05\,\frac{NL}{min}$

Testkanal $l/w/h = 30/0{,}25/0{,}1$ mm $\quad \| \quad \eta = 1\,mPa\,s$ (Wasser)

acc. to 2.53 $\rightarrow R_{hyd} = 12\,\eta\,l \cdot \frac{1}{h^3 w} = 1{,}44 \cdot 10^{12}\,\frac{Pa\,s}{m^3}$

$1\,\frac{m^3}{s} \hat{=} 6 \cdot 10^4\,\frac{l}{min}$

$\Delta p_{min} = R_{hyd} \cdot Q_{min} = 2{,}4048$ Pa $\rightarrow$ 0,024 mbar

$\Delta p_{max} = R_{hyd} \cdot Q_{max} = 2404\,\ell$ Pa $\rightarrow$ 240 mbar

$p_{reg} = R_{hyd} \cdot Q_{reg} = 1{,}2$ Pa $\rightarrow$ 0,01 mbar

0-500 mbar
0,01 mbar