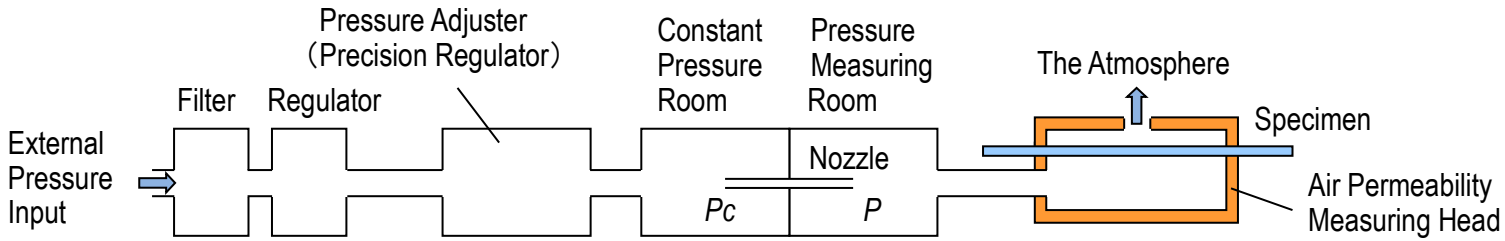
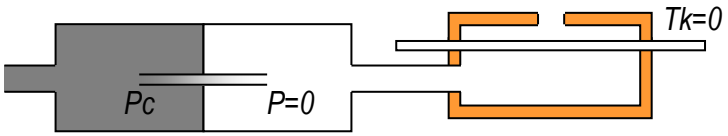
Measurement Principle of ‘Oken air permeability tester’

Measurement of principle of ‘Oken smoothness tester’ is the same as principle of ‘Oken air permeability tester’.

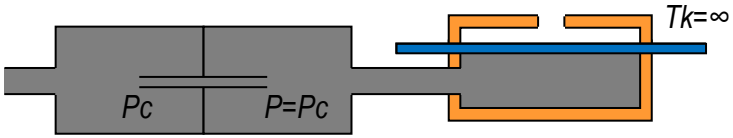


$Tk = 0 \quad \Rightarrow \quad P = 0$



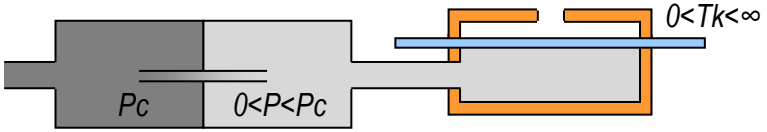
If Oken permeability resister of specimen Tk is equal to zero, then pressure at ‘Pressure Measuring Room’ P is also equal to zero.

$Tk = \infty \quad \Rightarrow \quad P = Pc$



On the other hand, if Tk is equal to infinity, then P is equal to pressure at ‘Constant Pressure Room’ Pc.

$0<Tk<\infty \quad \Rightarrow \quad 0<P<Pc$



In fact, Tk is greater than zero and less than infinity. So, P is greater than zero and less than Pc.
Relationship between Tk and P is as follows.

$$Tk = K\frac{P}{Pc-P}$$

Pc : Pressure at ‘Constant Pressure Room’.
P : Pressure at ‘Pressure Measuring Room’
Tk : Oken Permeability resister of specimen.
K : Constant (Oken Permeability resister of Nozzle)