Barometric Leg (Tail Pipe) Height

Minimum height of the barometric leg of a jet condenser from the condenser vacuum, local atmospheric pressure and water density, plus a safety margin.

Method: Hydrostatics h = (p_a − p_c)/(ρ g)

Input parameters

Unit system: SI

Parameter	Value	Unit
Condenser pressure (absolute)	16.000	kPa
Atmospheric pressure	101.33	kPa
Tail water density	990.00	kg/m³
Safety margin	1.0000	m

Calculated results

Parameter	Value	Unit
Column balancing the vacuum	8.7886	m
Leg height with margin	9.7886	m

Formula and method

$$H = \frac{p_a - p_c}{\rho g} + \Delta h$$

Variables

p_c	Condenser pressure (absolute)	Pa
p_a	Atmospheric pressure	Pa
ρ	Tail water density	kg/m³
Δh	Safety margin	m
h_0	Column balancing the vacuum	m
H	Leg height with margin	m

Method and standards

Hydrostatics.

Assumptions and limits

- Static column only: no velocity head or friction. The margin must cover them; the Hugot barometric column calculator adds them explicitly, so it gives a taller column for the same case.

References

- Hydrostatics h = (p_a − p_c)/(ρ g)

Report details

Report reference	FCC-0X6K-HN3J (the same inputs always give the same reference)
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Calculator	Barometric Leg (Tail Pipe) Height
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Release checks	2 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/sugar-ethanol/vacuum-water/barometric-leg-height

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.