HYDRAULICS.MECHANICS.IM

Pascal's principle

Two official wordings, kept apart, and a barometer carried up a mountain.

The IMechE, writing about Joseph Bramah's hydraulic press of 1795, puts Pascal's principle this way: "pressure throughout a closed system is constant." The 1911 Encyclopaedia Britannica article "Hydraulics" says something close, and not the same: "at any point in a fluid the pressure in all directions must be the same; or, in other words, the pressure on any small element of surface is independent of the orientation of the surface."

Official page	Wording kept on this sheet
IMechE, 2017, on the press	Pascal's principle, "that pressure throughout a closed system is constant." A force on the smaller piston "would be translated into a larger force on the larger piston," in proportion to the areas, "in a similar way to that in which a lever is used."
Britannica, 1911, "Hydraulics"	"At any point in a fluid the pressure in all directions must be the same." "Very great changes of pressure change the volume of liquids only by a small amount." Fluids are divided into liquids, "or incompressible fluids," and gases, "or compressible fluids."
Britannica, 1911, "Pascal, Blaise"	A treatise on the equilibrium of fluids, "written before 1651, published 1663." A barometer experiment in a tower at Paris, and, on a grand scale, by Florin Périer on the Puy de Dôme in Auvergne.

A caution, kept visible

Those official sentences are not rewritten here into a single modern definition. The 1911 Pascal article also uses the word "hydrodynamics" for the science he helped to found. That is the 1911 word, and it is left as it stands.

A short quiz

1. How does the IMechE put Pascal's principle, when it describes Bramah's press?
2. What does the 1911 "Hydraulics" article say must be the same at any point in a fluid?
3. Who, according to the 1911 Pascal article, carried out the barometer experiment on the Puy de Dôme?

Answers. 1. Pressure throughout a closed system is constant. 2. The pressure in all directions. 3. His brother-in-law, Florin Périer.

Wording from Karyn French, Institution of Mechanical Engineers, 28 December 2017, and from the 1911 Encyclopaedia Britannica articles "Hydraulics" and "Pascal, Blaise." Checked 17 November 2026.