

15.12 - Dissociating Water with Acoustic Cavitation

"In a non-flowing system the ambient **pressure** can be varied by sending sound waves through the liquid. If the **amplitude** of the **pressure** variation is great enough to bring the **pressure** locally down to, or below, the vapour pressure in the negative parts of the sound cycle traversing the liquid, minute cavities or bubbles will grow. If the **pressure amplitude** is increased to produce zero, and then negative, pressures (i.e. tensions) locally in the liquid, the bubble growth is increased. The tiny bubble is thus set into **motion**, growing and contracting in the **sound field**. This **motion** may be of various kinds, usually complicated. Two distinct types of bubble **motion** are possible: in the first are stable cavities or bubbles that oscillate for many periods of the **sound field**, whereas in the second are transient cavities that exist for less than one cycle.

"Two important characteristics of acoustic cavitation should be mentioned here. The first is that generally it is a non-linear process in that the change in the radius of the bubble is not proportional to the **Sound Pressure**. The second is that the high compressibility of the gas bubbles means that much **potential energy** is obtained from the sound waves when the bubbles expand and that **kinetic energy** is concentrated when the bubbles collapse. In transient cavitation, this **transformation** of a low energy **density sound wave** into a high energy density collapsing bubble occurs because the motion is non-linear. Because it concentrates the energy into very small volumes (**syntropy**) it can produce very high pressures and temperatures which can erode solids, initiate chemical reactions and produce luminescence." (Young, Cavitation; McGraw-Hill, 1989.)

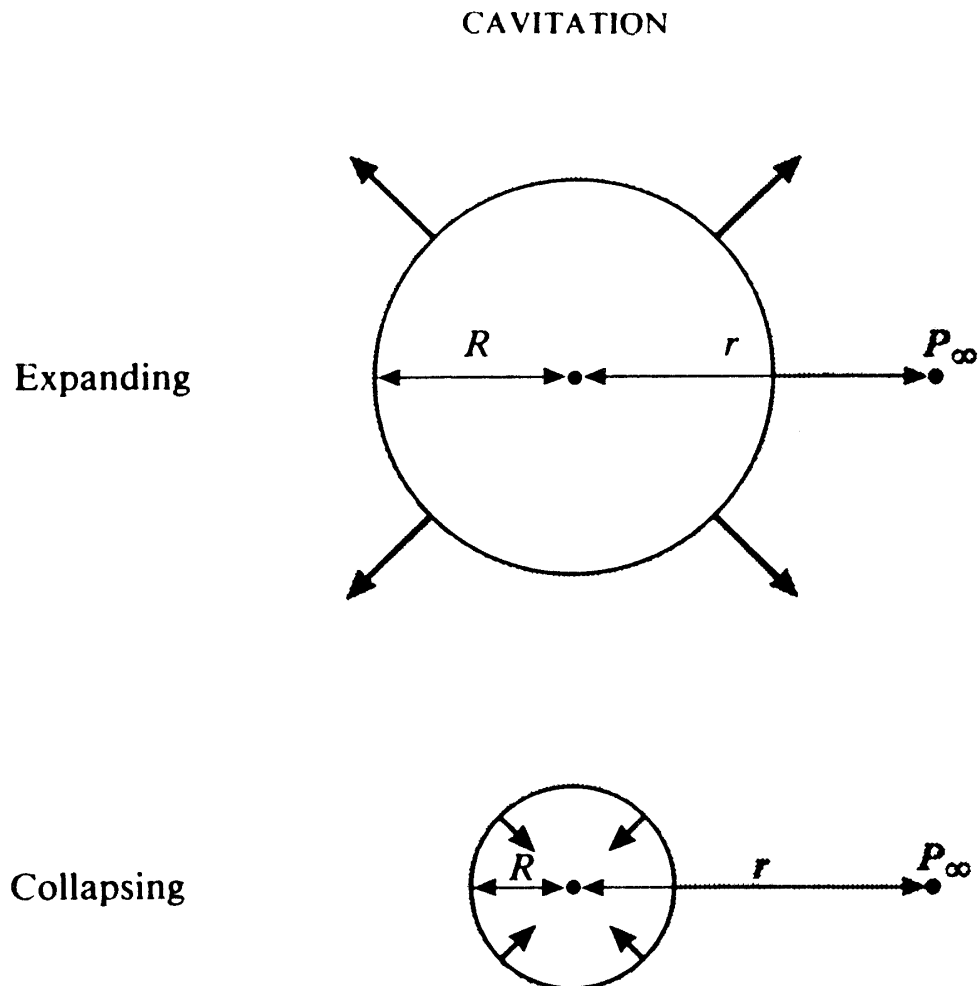


Figure 15.01 - Cavitation Bubbles Collapse in (Oscillating) Sound Field
([click to enlarge](#))

See Also

15.03 - Questions Concerning Dissociation
15.04 - Dissociating Water with Fire
15.05 - Relative Diameters in Dissociation
15.06 - Power of Dissociated Water
15.07 - Dissociating Process
15.08 - Dissociating Water with X-Rays - Radiolysis
15.09 - Dissociating Water with Ultrasonic Vibration - Puharich
15.10 - Dissociating Water with Alternating Current - Puharich
15.11 - Dissociating Water with Vacuum
15.12 - Dissociating Water with Acoustic Cavitation
15.13 - Dissociating Water Acoustically - Liberation of Quantum Constituents
15.14 - Dissociation Liberates Spontaneous Energy
15.15 - Progressive Dissociation
15.20 - Dissociation Frequency
15.21 - Water Dissociation Demonstration
Cavitation
Dissociation
Electrolysis - Russell
Implosion

<< 15.11 - - Part 15 - Table of Contents - - 15.13 >>