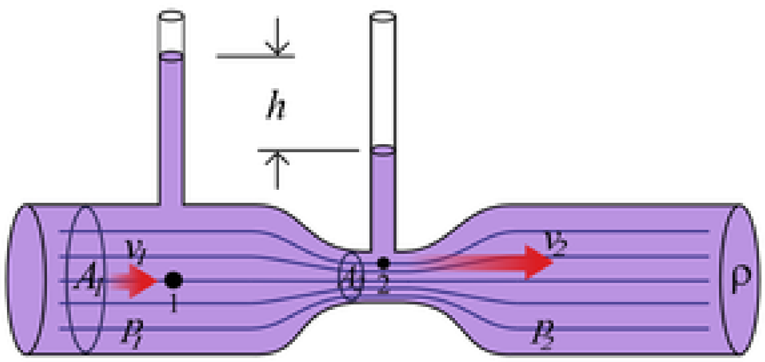
The FM-205 requires shop air. How does the air compressor creation suction with the FM-205? Does the FM-2024 handle have anything to do with this suction?

The Hakko FM-205 Desoldernig Station uses compressed air to create the suction for the FM-2024 handpiece. This is done by passing the compressed air through a venturi. The venturi causes the compressed air to speed up as it passes through the opening inside the venturi. At the point where the air speeds up, the air pressure drops and suction is created. This is referred to as the Venturi Effect, which is named after the Italian physicist Giovanni Battista Venturi who discovered the effect. The following is a more indepth description of the Venturi Effect: The **Venturi effect** is the reduction in fluid pressure that results when a fluid flows through a constricted section of pipe. The fluid velocity must increase through the constriction to satisfy the equation of continuity, while its pressure must decrease due to the conservation of energy: the gain in kinetic energy is balanced by a drop in pressure or what is called a pressure gradient force. An equation for the drop in pressure due to the Venturi effect may be derived from a combination of Bernoulli's principle and the equation of continuity. The limiting case of the Venturi effect is when a fluid reaches the state of choked flow, where the fluid velocity approaches the local speed of sound. In choked flow the mass flow rate will not increase with a further decrease in the downstream pressure environment. However, mass flow rate for a compressible fluid can increase with increased upstream pressure, which will increase the density of the fluid through the constriction (though the velocity will remain constant). This is the principle of operation of a convergent-divergent nozzle. Referring to the diagram below, using Bernoulli's equation in the special case of incompressible flows (such as the flow of water or low speed flow of gas), the theoretical pressure drop ($p1 - p2$) at the constriction would be given by

$$\rho(v_2^2 - v_1^2)/2$$



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