

With binary nozzles, the energy required for atomization is produced by the high velocity of air resp. gas flow. Different flow velocities of air/gas flow and medium cause pressure waves inside of the nozzle. The medium is, thus, split into fine droplets. Differences in velocity enable an atomization of viscous media with a droplet diameter of 20 to 100 µm at low pressure.

The air/gas flow exits the nozzle either in a linear or a rotating manner.

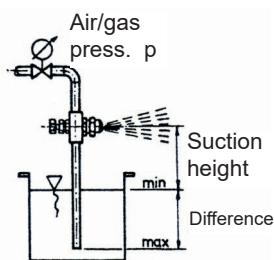
This rotation is the result of slots resp. tangential inlets.

In both cases, the medium is sucked into the cone-shaped swirl by means of the injector system's negative pressure.

1. Various media inlets

Depending on their design, three different kinds of media inlets can be distinguished:

Illu. 2



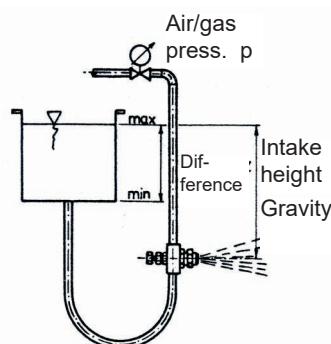
A. Suction system

The air/gas flow sucks in the medium and atomizes it to fine droplets. The flow rate inside of the nozzle varies with the medium's suction height.
(low suction height = large flow rate)

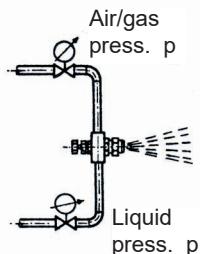
B. Gravity system

The medium is gravity-led into the nozzle.
The nozzle's flow rate varies with intake height.
(large intake height = large flow rate)

Illu. 3



Illu. 4



C. Pressure system

Medium and air/gas flow are pressure-led into the nozzle. Here, large flow rates can be put through.

2. Mixed forms of media

There are generally two methods for atomization in binary nozzles:

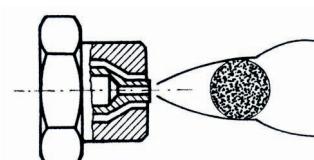
External mix

Air/gas and medium do not mix until outside of the nozzle. This method allows for the air/gas flow and the medium to be controlled easily and separately. External-mixing nozzles are clog-resistant. Even viscous media can be atomized. The higher the air/gas pressure, the finer the droplets. Droplet velocity is high.

Internal mix

Air/gas and medium mix inside of the nozzle. The mixture is created inside of the nozzle's chamber and sprayed through the outlet opening. The flow rate can be adjusted in correspondence with the outlet opening by means of a change in pressure relations. The outlet opening restricts the mixture's flow rate (medium and air/gas). When single parameters are changed, the total flow rate changes accordingly. The control range is limited in dependence on the nozzle design. Droplet velocity is lower.

Illu. 5



Illu. 6

