

GAS JET VACUUM EJECTORS - GESF TYPE

Suction and compression of gas and vapor



Threaded ejector in AISI 316

Gas jet ejectors use a compressed flow of air, nitrogen or natural gas to evacuate, mix and compress other gases or vapors. The high-pressure motive gas passes through the converging and diverging sections of the engine nozzle, accelerating the outlet gas to supersonic speed.

The low pressure generated attracts the gas to be pumped.

After mixing inside the diffuser, the mixture slows down: the kinetic energy decreases and is converted into pressure, which increases until it reaches the desired discharged value.

Gas jet ejectors cannot be used to lift and compress water because air, unlike steam, does not condense; only a nebulisation effect occurs (in this case, ejectors are used for sampling and analysing liquids).

Operational advantages:

- ✓ No moving parts, ensuring zero maintenance and high reliability.
- ✓ Continuous or discontinuous operation.
- ✓ Use in ATEX environments.
- ✓ Construction in metal or plastic materials depending on the required use.

Applicazioni

One typical application is the evacuation of the suction line of a centrifugal pump (fig. 1).

The ejector creates a low-pressure zone, removing the air inside the pump body and allowing the liquid to be sucked up.

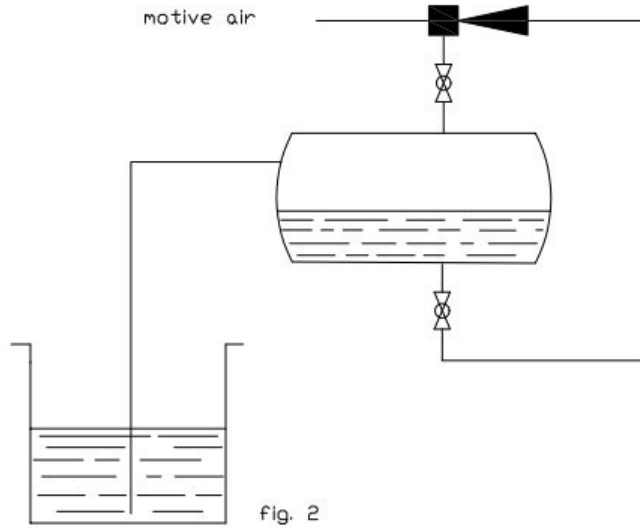
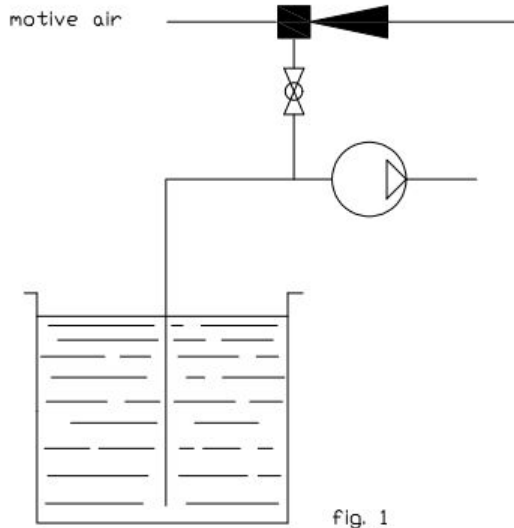
Once the pump and suction line are full of liquid, the ejector can be shut down and the pump can start operating.

Gas jet vacuum ejectors are also used to lift a liquid by creating a vacuum in a tank located at a higher height (fig. 2).

They are also used as gas compressors. The high-pressure gas flow carries the low-pressure gas, compressing the mixture to an intermediate value.

For more specific uses such as:

- Localised ventilation in industrial environments, or suction of fine dust, fumes (etc.), refer to the product data sheet for CHEGEJ or GES Venturi Ejector Blowers
- Protection against cavitation of liquid ring vacuum pumps and extension of the achievable vacuum level, please refer to the product data sheet for Air Ejectors for Liquid Ring Pumps.
- Please contact our technical department to define the performance of the ejector best suited to your application.



Calculation of motive air consumption

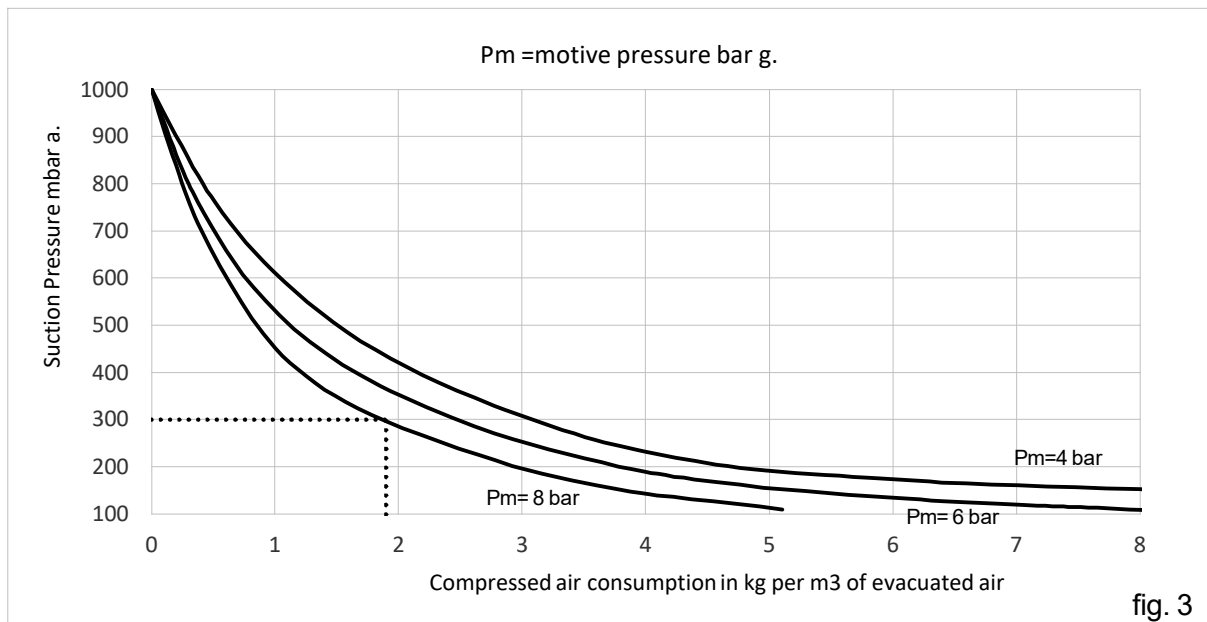
Motive air flow rate is calculated in relation to volume and evacuation time according to the following formula:

$$Mm = X_{spec} * V * 60 / t$$

X_{spec} = Compressed air consumption in kg per m³ of evacuated air

V = Volume of the tank to be evacuated

T = evacuation time in minutes



Example:

A vessel of 5 m³ must be evacuated from atmospheric pressure to 300 mbar in 10 minutes.

Compressed air at 8 bar is available.

From fig. 3, we obtain a value of X_{spec} equal to 1.9 kg of compressed air for each m³ of evacuated air.

The corresponding driving air consumption is: $Mm = 1.9 * 5 * 60 / 10 = 57 \text{ kg/h}$