



## P100 Liquid Jet Eductor Sizing

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### **Eductor Sizing**

#### ***Simple example sizing an eductor for a water flow:***

An eductor is required to pump 20 gpm of water from a tank 15 feet below and discharge the water 10 feet vertically (equivalent to a back pressure of 4.3 psi). The available water pressure is 60 psi. Size the eductor and determine the motive water flow required.

Referring to the Eductor Performance table:

A 1" eductor using a small nozzle (SN) will pump a 12.3 gpm flow of water using 11.3 gpm of motive flow. The required capacity ratio (CR) needed is 20 gpm/12.3 or 1.6. A 1-1/2" eductor has a CR of 2.25.

Use a 1-1/2" eductor with a small nozzle (SN) to handle  $2.25 \times 12.3 \text{ gpm} = 27.7 \text{ gpm}$  using  $2.25 \times 11.3 \text{ gpm} = 25.4 \text{ gpm}$  of motive water.

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#### ***Another example***

An eductor is required to pump 23 gpm of water from a tank 15 feet below and discharge the water 20 feet vertically (equivalent to a back pressure of 8.6 psi). The available water pressure is 60 psi. Size the eductor and determine the motive water flow required.

Referring to the Eductor Performance table:

A 1" eductor using a small nozzle (SN) will pump a 7.1 gpm flow of water using 11.3 gpm of motive flow. The required capacity ratio (CR) needed is  $23 \text{ gpm}/7.3$  or 3.2.

A 2" eductor has a CR of 4.0. Using a SN version of the 2" eductor will pump  $4.0 \times 7.1 \text{ gpm} = 28.4 \text{ gpm}$  using  $4 \times 11.3 \text{ gpm} = 45.2 \text{ gpm}$  of motive flow.



A 1-1/2" eductor has a CR of 2.25. Using a LN version of the 1-1/2" eductor will pump  $2.25 \times 10.6 \text{ gpm} = 23.9 \text{ gpm}$  using  $2.25 \times 21.8 \text{ gpm} = 49.1 \text{ gpm}$  of motive flow.

Both the 2" eductor with small nozzle and the 1-1/2" eductor with large nozzle will handle the 23 gpm flow. The costs of the required motive flow and the cost of the eductor need to be considered in the decision.

***Tips:***

***Consider the pipe losses in the discharge piping when sizing an eductor.***

***For applications with:***

- ***Specific gravity greater than "1"***
- ***Viscosity greater than 100 centipoise***
- ***Higher temperature applications***

***Refer to an Inyo Process application specialist for guidance.***