

Ejectors can use process vapors instead of steam as the motivating fluid. Gas compression (shown here) and steam desuperheating are other applications.

1.0 Standard Atmosphere (Std. Atm.) is equivalent to

- 14.7 psi
- or 33.9 ft of H<sub>2</sub>O
- or 29.921 in of Hg
- or 760 mm of Hg
- or 1.0332 kg/cm<sup>2</sup>
- or 101.325 Kilopascals (Kpa)
- or 1.01325 Bars

**Example Conversion**  
Convert 7.0 psi to Bars:

$$7.0 \text{ psi} \times \frac{1.01325 \text{ Bars}}{14.7 \text{ psi}} = 0.48 \text{ Bars}$$

# of Stages	Operating Suction Press. (Hg Abs.)	Closed Test Suction Press. (Hg Abs.)
1	3" and up	1½"-2"
2	10 mm - 4"	5 mm
3	2 -15 mm	1 mm
4	0.25 - 3 mm	50 - 100 microns
5	0.3 mm and less	5 - 10 microns

**Suction or Steam Line Sizing**

$$d = \sqrt{\frac{0.051 \times W \times v}{V}}$$

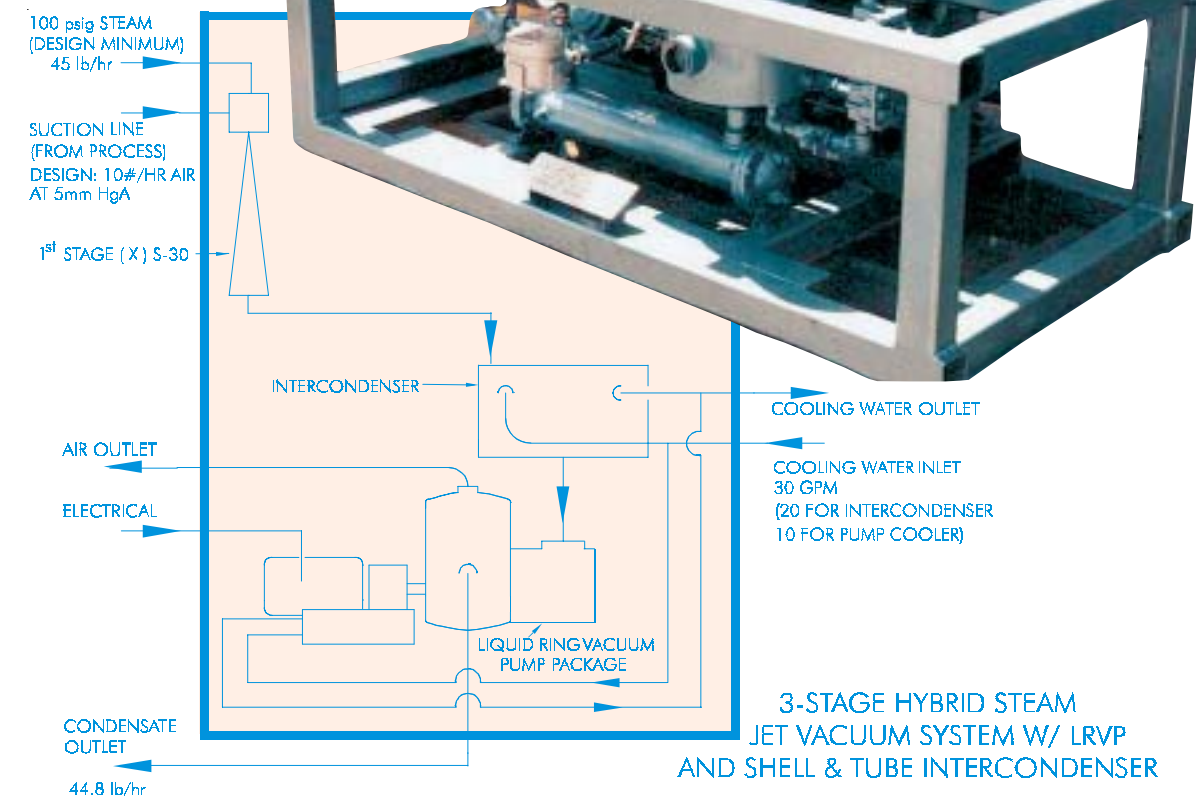
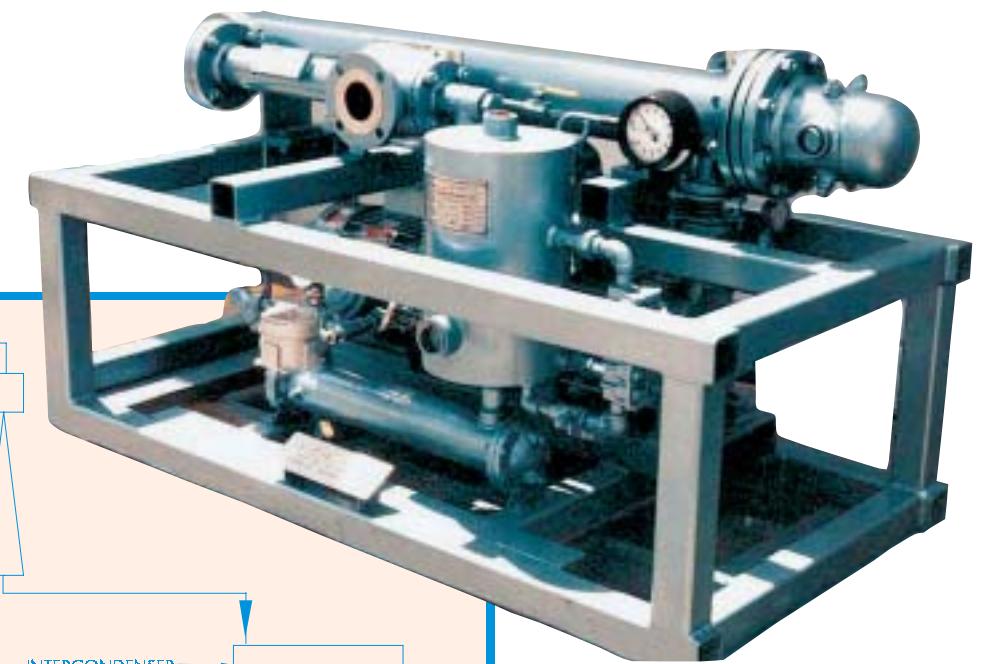
d = pipe i.d., inches  
 W = total flow, lb/hr  
 v = specific volume, cu. ft./lb.  
 V = velocity (typically 200 ft./sec.)

# ARTISAN

# Jet - Vac®

thinks you should know:

How to obtain the **most reliable vacuum** at the lowest capital and operating costs.



Talk to the people at Jet - Vac®  
 For all steam jet and hybrid ejector systems  
 CALL 781-893-6800  
 e-mail: [choumiller@artisanind.com](mailto:choumiller@artisanind.com)  
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A guide to  
**Jet-Vac steam jet ejectors**  
 a proven technology  
 a proven supplier

## Reliable and Proven Technology

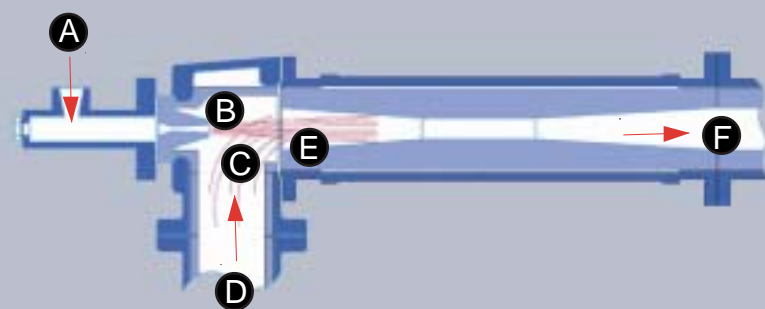
### Single and Multi-stage ejector systems

- No moving parts
- Simple, quiet, compact
- Needs only process, utility & structural connections
- Nearly maintenance free
- No lubricating oil

**Only Jet-Vac** manufactures interchangeable components in all materials of construction - allows retrofitting in **corrosive environments**.

### Hybrid Systems - with liquid ring pump final stages

- Ideal for low level installations
- Reduced steam consumption
- Compact, modular package



How an ejector works

- A** Steam is fed at high pressure and relatively low velocity into the motive fluid connection
- B** Steam expands through the ejector nozzle and changes into a high velocity and low pressure stream. If lower than atmospheric pressure, a vacuum is created.
- C** A low absolute pressure attracts the fluid **D** to be pumped from the process connection.
- E** Momentum is transferred between fluids, raising the pressure of the fluid being pumped.
- F** The mixture of fluids then discharges to the atmosphere (or the next ejector in multi-stage designs).

## Reliable and Proven Manufacturing

### Jet-Vac provides:

- Complete system responsibility
- Complete vacuum packages including controls
- Professional and timely support during inquiry, proposal, engineering, manufacturing and start-up
- Modern, full function testing facilities
- Custom engineering with state-of-the-art computer analysis
- Fabrication to ASME Code, ANSI B31.3, B31.1, TEMA and HEI standards
- Shell and tube or direct contact condensers
- Steel, cast iron, stainless steel, hastelloy®, titanium, or graphite lined

Right: Jet-Vac  
2100 ton  
three stage  
water chilling system



Three Stage Hybrid System



Three Stage Ejector Packaged System



Left: (foreground)  
Jet-Vac® hybrid  
vacuum system  
providing vacuum to  
Artisan Rototherm®  
thin film evaporator  
(background) that  
produces a free  
flowing powder.

### Consider all steam jet and hybrid ejector systems

- |  |  |
|--|--|
| <p><b>For:</b></p> <ul style="list-style-type: none"> <li>Evaporation</li> <li>Stripping</li> <li>Refrigeration</li> <li>Filtration</li> <li>Distillation</li> <li>Crystallization</li> <li>Drying</li> <li>Degassing</li> </ul> | <p><b>With:</b></p> <ul style="list-style-type: none"> <li>Reliability</li> <li>Low capital cost</li> <li>Corrosion resistance</li> <li>Minimal air pollution</li> <li>Any size load</li> <li>Low temperature operation</li> </ul> |
|--|--|

### Optimum steam jet system design requires the following information:

- Absolute suction pressure and temperature
- Gas and vapor flow (lb./ hour of each component in the process load)
- Maximum discharge pressure
- Maximum condensing water temperature (through-out the year)
- Minimum available steam pressure and temperature
- Materials of construction

### Jet-Vac serves these industries

- Chemical
- Petrochemical
- Pharmaceutical
- Food
- Power