Tech Sheet #121
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Vacuum Relief

Theoretically, a deaerator may be subject to internal pressures as low as the vapor pressure of the coldest entering water stream that may be a considerable vacuum. The vessels should be protected against damage from excessive vacuum (external pressure) by either designing for full vacuum or by the use of vacuum relief devices (vacuum breakers). Allowable external pressure may be calculated by the ASME Code.

Vacuum breaker valves may be common check valves or spring/weight loaded devices. When the User is not willing to accept some leakage from the vacuum breaker, the more costly spring or weight loaded device shall be specified.

Operation of the vacuum breaker will cause air to enter the deaerator that must be purged before full deaeration performance can be resumed. Frequent opening of the vacuum breakers indicates faulty design, maintenance, or configuration of the steam and/or level controls.

If a deaerator and storage tank are designed for full vacuum, no vacuum breaker is required.