

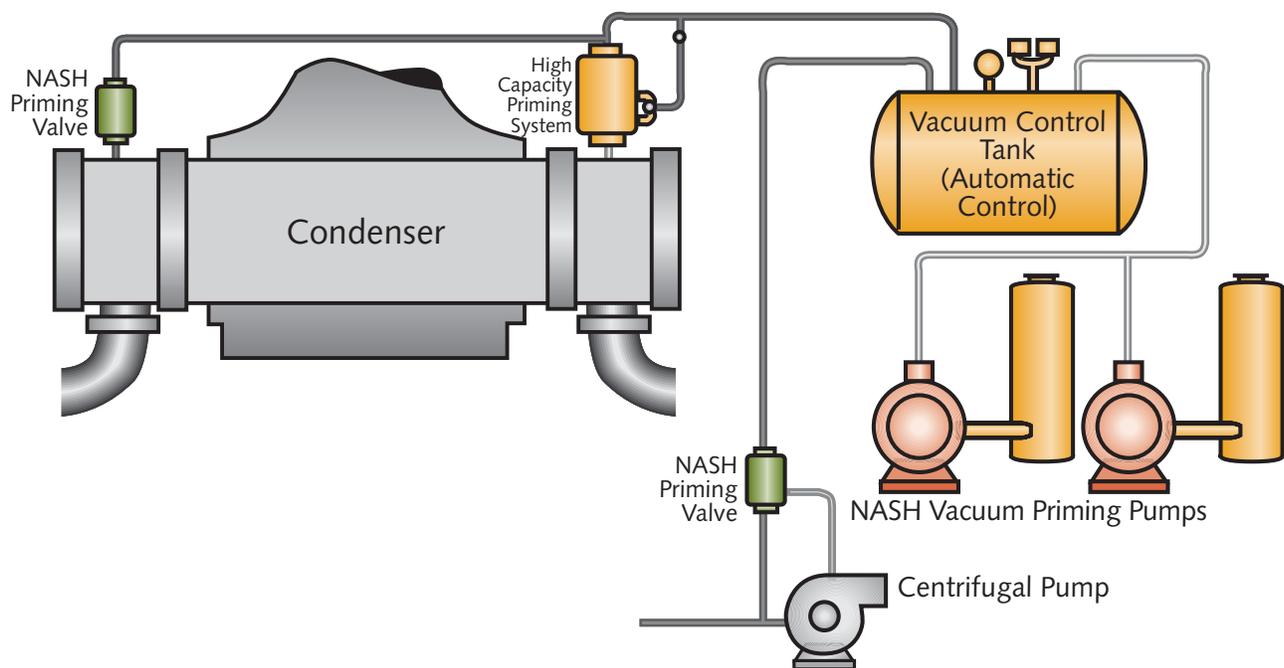
NASH Priming Systems



For over half a century, Nash systems have been the products of choice for air removal systems in steam cycle and geothermal power generation plants throughout the world. By reducing the energy loss due to air leakage into the condenser, our vacuum systems save millions of dollars worth of energy every day.

Why Use a Nash Priming System

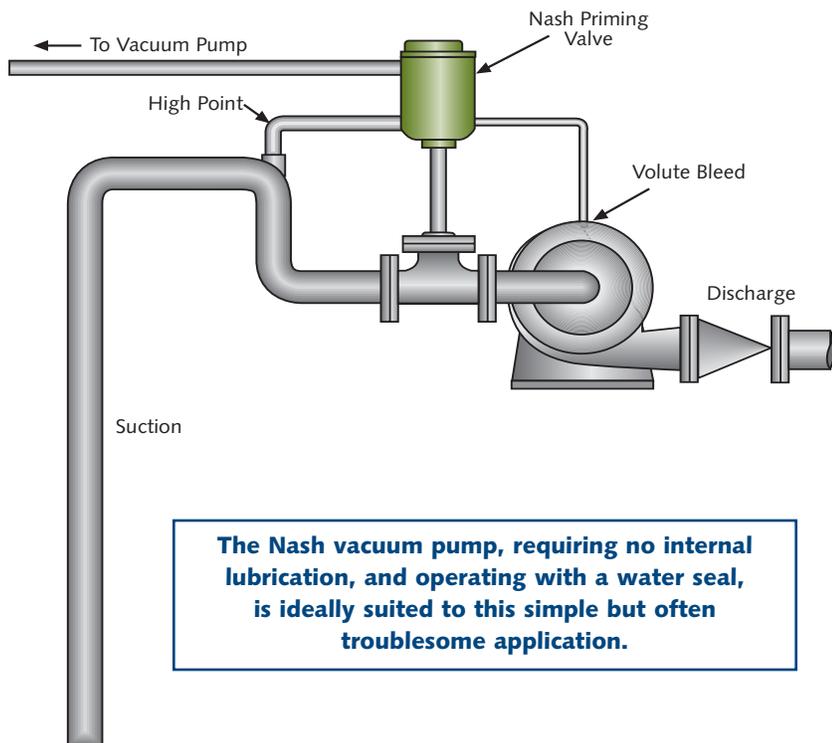
A Nash vacuum system is often used to prime one or more centrifugal pumps located above the free liquid levels of their suction sources. Vacuum draws liquid up until it fills each pump's suction line and floods its volute. This condition can be established before the pump is started up, so that it is always primed and ready to begin pumping.



Condenser Water Box Evacuation

With the exception of installations dependent upon elevated cooling towers as a water source, all systems pump water from and return it to a level below the top of the condenser. When such a system is completely evacuated it is, in effect, a modified siphon. The static head at the condenser inlet is balanced by the water column on the discharge side. This permits circulators to function at minimum total dynamic head based on the friction drop through the system. Air accumulation can impair or destroy the siphon effect, resulting in increased power requirements for the circulating pumps and a reduction in the volume of cooling water.

- In the water section of the condenser, pressure can drop as it passes through and produce negative pressure at the outlet. Any leaks in this area will therefore cause air to move inward, where it can accumulate in the discharge water box and in sections of the discharge piping.
- An ever-present source of unwanted air is the release of dissolved non-condensibles in the water through temperature and pressure differences.
- Air accumulation in water boxes can result in the blockage of upper tube rows. In cooling water piping, the effect of this air is similar to that of a partially closed valve - cooling water flow is reduced and so is system efficiency.



The Nash vacuum pump, requiring no internal lubrication, and operating with a water seal, is ideally suited to this simple but often troublesome application.

NASH Vacuum Systems for Centrifugal Pump Priming

The need for priming any centrifugal pump operated without positive suction head is generally recognized. Once primed, a flooded centrifugal impeller handling cool water is capable of maintaining flow at suction lifts in excess of 20 feet. However, as little as 2% by volume of entrained air or evolved gases can result in air accumulation at the impeller eye - causing the pump to lose suction and cease functioning. Air and gases must therefore be removed to insure proper delivery.

Industry Workhorses

Gardner Denver Nash priming valves were designed specifically to be used in Nash vacuum pump priming systems. They are extremely simple, dependable and durable. It has been proven in successful service for nearly fifty years.

How it works

The priming valve is a float valve. It has an open passage from all inlet connections through to the vacuum outlet connection as long as no liquid is present. When liquid enters the priming valve body, the buoyant float rises and closes the valve.

In a typical priming system, a mixture of air, gas and vapor continues to bubble up through the liquid into the priming valve body. It may come from inward air leakage, may be released from entrainment in liquid, or may vaporize from a volatile liquid. It separates out and accumulates in the priming valve body. As it does, the liquid level in the body goes down. The float drops, and it opens the valve to release the accumulation. With the release of air, gas and vapor to the vacuum system, liquid rises in the body again, and the valve closes.



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